FEBRUARY 15, 1950

# MODERN MEDICINE

*The Journal of Diagnosis and Treatment*


Dr. Howard A. Rusk *(see page 9)*

***Table of contents page 9***

**Because gradual lowering of blood pressure is so important in hypertension,** Nitranitol is almost universally prescribed in such cases. Its gradual action and its ability to maintain lowered pressure for prolonged periods make Nitranitol an ideal vasodilator. Nitranitol, virtually nontoxic, is safe to use over long periods of time. It is available in these three forms:

- **When vasodilation alone is indicated.** *Nitranitol.* (¾ gr. mannitol hexanitrate.)
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# NITRANITOL®

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Merrell
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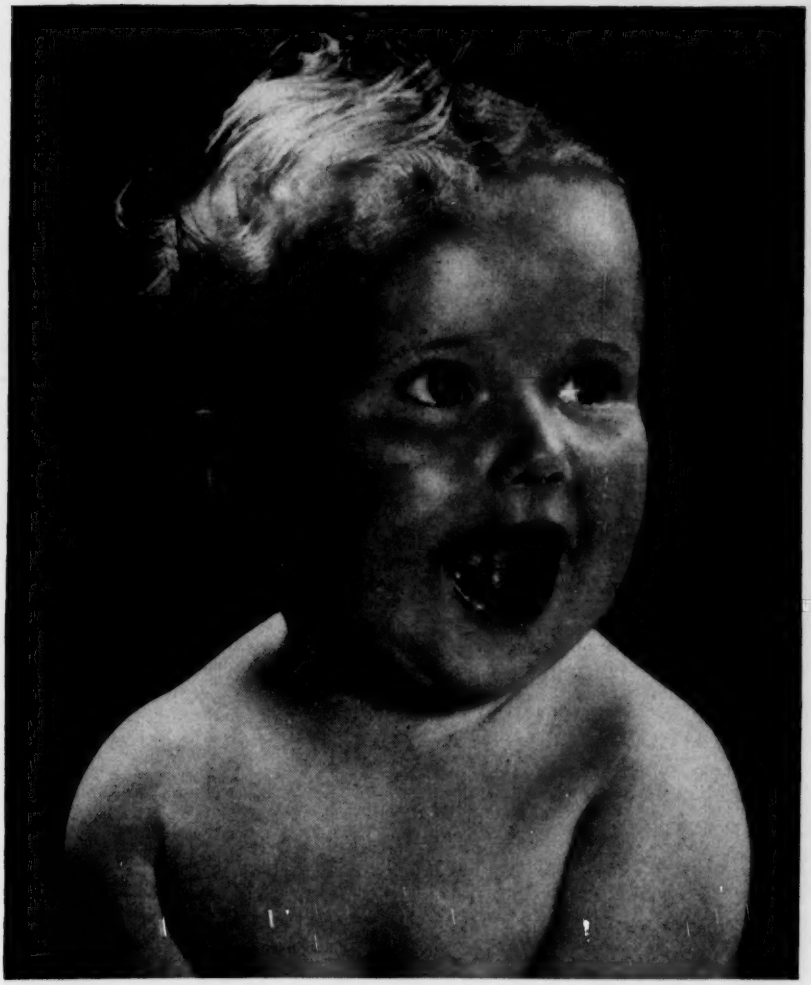

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# EPIDEMIC VOMITING

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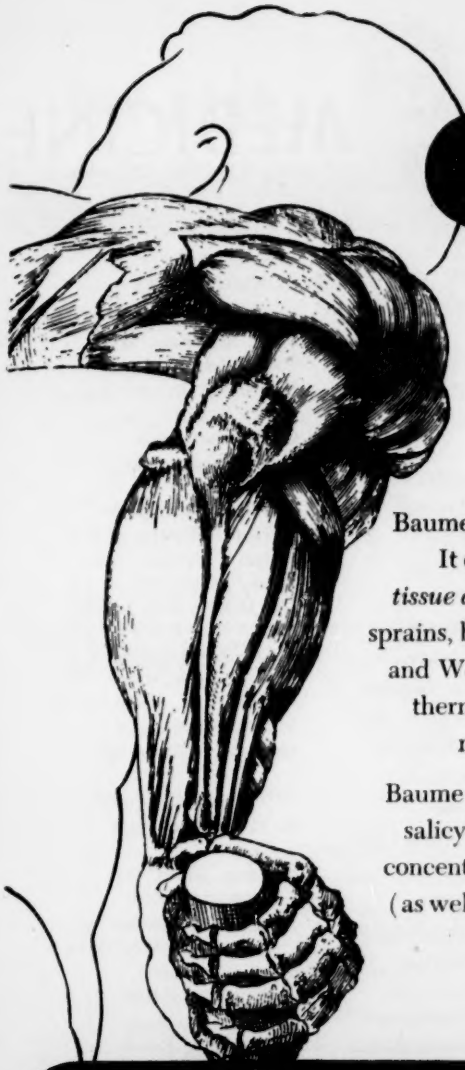

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The "hyperkinemic" activity of Baume Bengué goes beneficially deep. It enhances blood flow *through the tissue area* in arthritis, myositis, muscle sprains, bursitis and arthralgia. As Lange and Weiner[1] determined by the use of thermo-needles, hyperkinemic effect may extend to a depth of 2.5 cm.

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## Baume Bengué

ANALGESIC

1. Lange, K., and Weiner, D.: J. Invest. Dermat. 12:263 (May) 1949.

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# MODERN MEDICINE

THE JOURNAL OF DIAGNOSIS AND TREATMENT

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1. Lisser, H.: Calif. & West. Med. 64: 177, 1946

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# *Contents for February 15 1950*

VOL. 18, NO. 4

THE MAN ON THE COVER is Dr. Howard A. Rusk, one of the country's leading exponents of the "third phase of medicine." He has just returned from Austria and Poland where, as a Consultant representing the United Nations, he assisted in establishing rehabilitation programs for the disabled. Dr. Rusk is Professor and Chairman of the Department of Physical Medicine and Rehabilitation, New York University–Bellevue Medical Center, and is an associate editor of *The New York Times*. He has acted as supervisory editor for this issue of MODERN MEDICINE and wrote the foreword, page 63, to the Symposium on Physical Medicine.

*Contents for February 15 1950*

CONTINUED




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**Its Three-Fold Effect**

1. Decongests without irritation to the membrane and without ciliary injury.
2. Definitely bacteriostatic, yet non-toxic to tissue.
3. Stimulates secretion and cleanses, thereby enhancing Nature's own first line of defense.

## LETTER FROM THE EDITOR

*Dear Reader:*

You can read a report in MODERN MEDICINE in two or three minutes. In many cases perusal of the paper upon which the report is based would require a half-hour or more.

This is not all the time you save. At least two or three specialists in the field involved read a dozen or more papers to select the most authoritative article bearing upon the condition under discussion.

The cumulative training and experience of our Editorial and Consultant boards are utilized in every selection made. From these selections the Editorial Committee plans each issue to include something of particular interest to every practitioner of medicine. Especial stress is laid on material that will be useful in daily practice.

Then our staff of medical science writers gets to work. The papers selected are carefully studied from the clinician's viewpoint. An outline is made for most effective presentation, and the actual writing begins.

Writer time is spent prodigally to save reader time. After the first draft is framed, revision begins. The report is rewritten once or several times to squeeze out nonessentials. The report is condensed and tightened, but every significant fact bearing on diagnosis and treatment is retained. To insure accuracy, the report is carefully compared, statement by statement, with the original paper.

When the editorial staff is satisfied, typescripts are given to the Editorial Committee and the Consultant Board. Each one of these physicians criticizes the report independently and makes suggestions. If necessary, the report is revised or even rewritten. Only after it has received unqualified approval of Consultants and the Editorial Committee is the report ready for MODERN MEDICINE.

Untold man-hours are spent on the one report which you read in three minutes. But if we have saved time for you we think it is worth while.

# Enticement..

to

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when you prescribe penicillin

# CONFETS

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for finicky young patients

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PINK

WHITE

GREEN

YELLOW

# *Correspondence*

*Communications from the readers of* MODERN MEDICINE *are always welcome. Address communications to The Editors of* MODERN MEDICINE, *84 South 10th St., Minneapolis 3, Minn.*

### Filter for Benzidine Test

TO THE EDITORS: I wish to commend you on the abstract you published of our article about an improved benzidine test (*Modern Medicine*, Dec. 1, 1949, p. 43). I would like to emphasize, however, that it is important that the filtrate be clear, and that a No. 5 Whatman or more retentive paper must be used for this purpose.

M. B. LEVIN, M.D.

Baltimore

### Would Let Public Know

TO THE EDITORS: There is a continuous trend to commend the General Practitioner in many medical journals. A long article on the subject recently was entitled "The Most Important Member of the Medical Profession." I often wonder why these articles are not printed in public magazines, so that the public will start to know the truth. That's the only way to prevent the gradual disappearance of the traditional family doctor, to prevent socialized medicine and excessive specialization, and, last but not least, to encourage young medical students to go in for general practice.

LEON ROPSCHUTZ, M.D.

Yonkers

### $H_2O$ Instead of Hg

TO THE EDITORS: I have been reading some of the articles in past editions of *Modern Medicine* and I would like to make a correction. In the August 15, 1949 edition, p. 34, a Consultant in Anesthesiology, in suggesting treatment of postspinal anesthesia headache, advises raising the "spinal fluid pressure to 110 or 120 mm. of *mercury*." I am certain he meant "mm. of *water*." The former would be disastrous.

JOHN P. ALBANSES, M.D.

Bronx

¶ Dr. Albanses is correct.—Ed.

### Correspondent Erred

TO THE EDITORS: In a recent issue of *Modern Medicine* a correspondent quoted my book *Care of the Aged* as stating that 250 mg. per 100 cc. sugar in the blood was the goal of treatment in diabetes of elderly patients (Dec. 1, 1949, p. 30). This is an error in quotation. In the third and fourth editions I stated that 200 mg. was the goal of treatment; in the fifth edition, 200-210 mg. was given as the renal threshold in the healthy aged.

MALFORD THEWLIS, M.D.

Wakefield, R. I.

*(Continued on page 18)*

## *True in '38*

"Because of the convenience, smaller adequate dose, and better tolerance, the trend is toward the use of ferrous sulfate . . ."

*Sielke, E.L.: Rhode Island M.J. 21:61 (April) 1938*

## *True in '48*

"No iron preparation has proved superior to ferrous sulfate, with respect either to economy or efficacy."

*Emerson, C.P., Jr.: M. Clin. North America 32:1264 (Sept.) 1948*

## *and True Today*

There are many iron preparations, but only Feosol Tablets provide ferrous sulfate with the special, S.K.F.-developed vehicle and coating that—

***1.*** prevent oxidation of the ferrous sulfate into the inferior ferric form

***2.*** assure prompt disintegration in the acid medium of the stomach and upper duodenum, where iron absorption is best.

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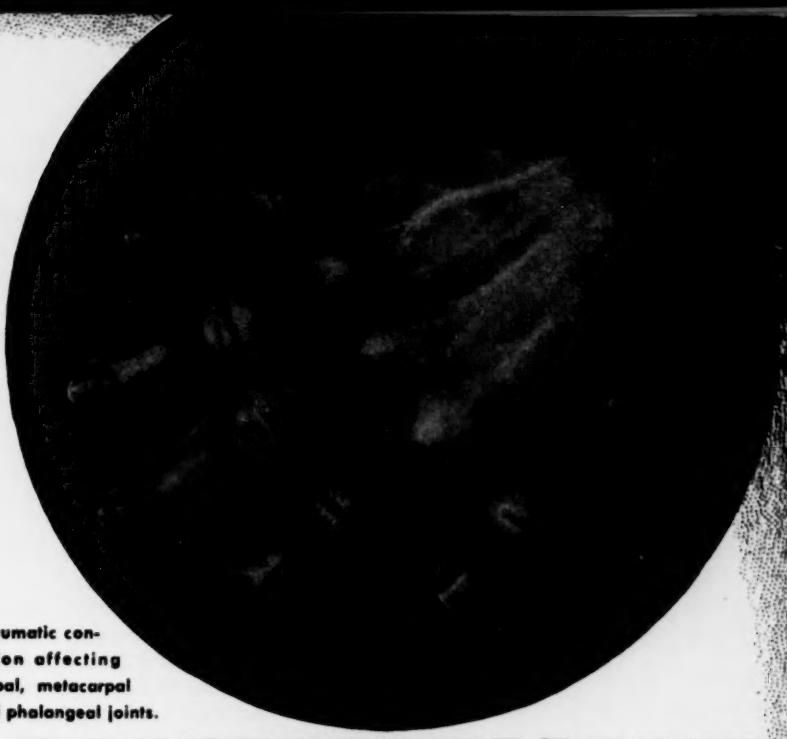


Rheumatic condition affecting carpal, metacarpal and phalangeal joints.

Disappearance of inflammatory signs after effective treatment.

DETROIT
27, MICH.

### Cortisone, ACTH, and Gout

TO THE EDITORS: I have just had an opportunity to see the December 15 issue of *Modern Medicine*. The contents of the gout article (p. 57) are most satisfactory and I hope will be instructive to many of the readers.

I think it was a wise decision to omit any reference to cortisone and ACTH in treatment. Our results during the past two months on a limited number of patients are not fully understood and by no means substantiate some of the claims in the lay press. These substances should still be considered highly experimental and should not be included in general therapeutic discussions of gout and acute gouty arthritis.

JOHN H. TALBOTT, M.D.

Buffalo

### Chest Surgery Anesthesia

TO THE EDITORS: I think that Dr. W. W. Buckingham is one of the pioneers in using epidural anesthesia in thoracic surgery in this country. There has been no other anesthesia used in the tuberculosis chest work at the Missouri State Tuberculosis Sanatorium at Mount Vernon, Mo., since October 30, 1945.

In analyzing 607 thoracic surgical operations the following advantages have been noted:

1] The incidence of spreads and reactivations has been unusually low. There were only 10 spreads and 3 reactivations in the series two months after surgery. This is an incidence of 1.65% for the spreads and 0.49% for the reactivations. The reason for this low incidence is that the patient could cough and expectorate at all times during surgery so that there was continuous drainage of the bronchial secretions.

2] The capillary oozing is less than the general anesthesia.

3] There is maximum oxygenation at all times.

4] The electric cautery can be used with safety. This is not always the case with general anesthesia.

ARCH. J. BEATTY, M.D.

Kansas City

### Periodic Burning in Thighs

TO THE EDITORS: May I add my humble suggestion to that of your Consultant in Psychiatry (*Modern Medicine*, Oct. 15, 1949, p. 26) on a possible diagnosis in the case of the thirty-seven-year-old woman with periodic burning in the thighs. I would like to suggest that some of the tests for porphyrins might be considered.

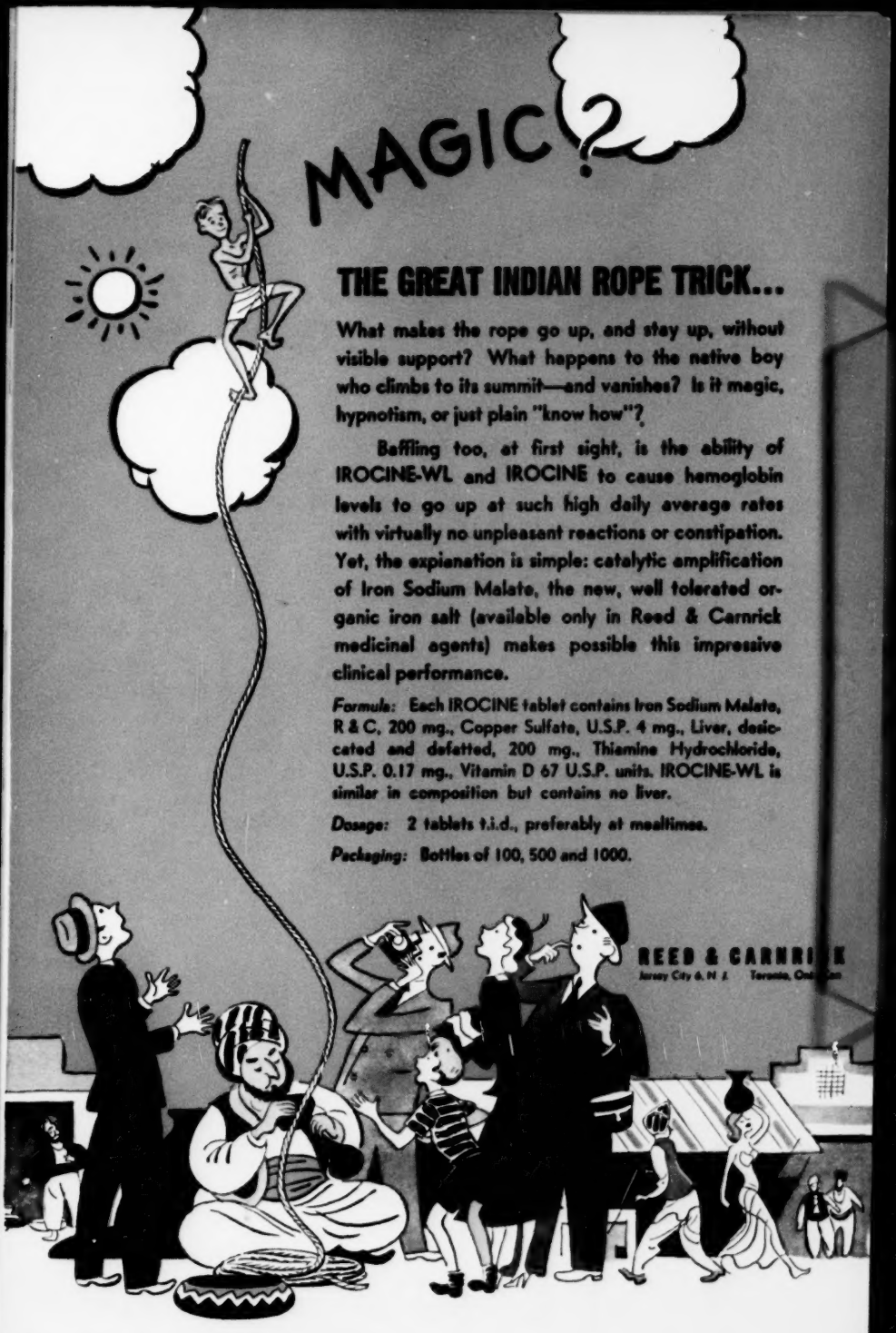
I know of a case that baffled many this summer. The woman's symptoms started with severe burning in thighs and buttocks; later there was associated abdominal pain.

The diagnosis was reached by chance when the patient's physician happened to be talking about the case at the lunch table in one of the hospitals. His conversation was overheard by another physician who was interested in research on porphyrins and asked for a urine specimen.

After the diagnosis was made, it was found that a nurse in the hospital had made a note about the peculiar color of the patient's urine, but the significance of this observation had been overlooked.

DANIEL B. PEELER, M.D.

Rochester, N.Y.




## THE GREAT INDIAN ROPE TRICK...

**What makes the rope go up, and stay up, without visible support? What happens to the native boy who climbs to its summit—and vanishes? Is it magic, hypnotism, or just plain "know how"?**

**Baffling too, at first sight, is the ability of IROCINE-WL and IROCINE to cause hemoglobin levels to go up at such high daily average rates with virtually no unpleasant reactions or constipation. Yet, the explanation is simple: catalytic amplification of Iron Sodium Malate, the new, well tolerated organic iron salt (available only in Reed & Carnrick medicinal agents) makes possible this impressive clinical performance.**

***Formula:*** **Each IROCINE tablet contains Iron Sodium Malate, R & C, 200 mg., Copper Sulfate, U.S.P. 4 mg., Liver, desiccated and defatted, 200 mg., Thiamine Hydrochloride, U.S.P. 0.17 mg., Vitamin D 67 U.S.P. units. IROCINE-WL is similar in composition but contains no liver.**

***Dosage:*** **2 tablets t.i.d., preferably at mealtimes.**

***Packaging:*** **Bottles of 100, 500 and 1000.**

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# Many tongues . .

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**Millions of prescriptions containing Elixir Peptenzyme have been filled since 1889, in all parts of the English speaking world. In the Orient, too, Elixir Peptenzyme is widely available—in Bombay, Calcutta, Nova Goa, Colombo, Dacca, Chittagong, Shanghai, Hongkong, Manila, and the hinterlands.**

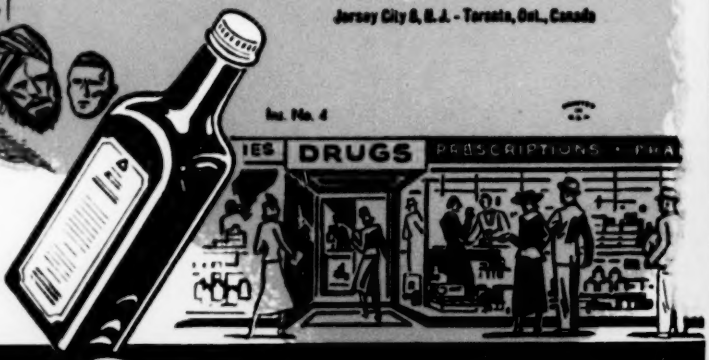
**Uniquely formulated Elixir Peptenzyme contains sixteen aromatics which effectively disguise the taste and odor of objectionable drugs. It is compatible with almost all commonly used pharmaceuticals. Three solvents assure unusual dissolving properties.**

***Packaging:*** **Bottles of 8 oz., 16 oz., 5 pts. and 1 gallon.**

**REED & CARNRICK**

**Jersey City 6, N. J. - Toronto, Ont., Canada**

FOR GOOD TASTE
IN MEDICINE




# Elixir Peptenzyme

# *Washington Letter*

## Pure Food and Drug Agency Efficient on a Small Budget

Food and Drug Administration is one federal agency that gets along, and well, with relatively little money and with a minimum of publicity. It could make use of a larger appropriation, but doesn't want publicity.

For the current fiscal year, ending July 1, FDA is spending $4,800,000, just a few thousand more than it had last year. This pays the salaries of about 1,100 people, most of them technical or professional, and also finances thousands of investigations and tests.

"We aren't looking for general publicity," George P. Larrick, one of the two associate commissioners, told MODERN MEDICINE. "We find that industry, 98% of the time, is cooperative. The drug manufacturers usually are concerned about the same things we're concerned about. We don't want to give the impression that we're waging a campagin against the drug industry. That is certainly not the case."

Mr. Larrick said that the general public misunderstands the work of FDA, possibly because of the lack of publicity. He emphasized that the organization is not attempting to stop self-medication but to make self-medication safe. FDA applies two tests to drugs prepared for self-medication: First, are they safe? Second, will they do some good? If the drugs meet these tests, FDA approves.

Like so many other government organizations, the administration would be helpless if it did not have aid from professional groups such as the AMA.

*"It would help me speak more freely if you would keep murmuring things like 'yes, dear,' 'Really, dear?' and 'You're so right, dear.'"*

Liaison is maintained with AMA Councils on Pharmacy and Chemistry, Physical Medicine and Rehabilitation, Food and Nutrition, Cosmetics, and Therapeutic Trials. There is even a noticeable shifting of personnel between FDA and AMA. Recently Dr. Robert T. Stormont resigned as FDA's medical director to become AMA's director of therapy and research and secretary of the AMA Council on Pharmacy and Chemistry.

Dr. Stormont's successor is Dr. Erwin E. Nelson. As medical director of Food and Drug Administration, Dr. Nelson will supervise a wide range of activities. The medical division provides technical information on medicine, physiology, and related subjects as they apply to food, cosmetics, and drugs. Technics of analysis are developed and assistance is given in labeling investigations.

By law, FDA is assigned the task of protecting the public against unsafe or mislabeled drugs that endanger lives or waste the buyer's money. It also protects honest businessmen by exposing and prosecuting fraudulent producers or retail sellers.

Most of its cases, even those that reach the Supreme Court, are of technical, not popular interest. The most sensational open case now on FDA books is that of a small producer of patent medicine. He was accused of submitting false evidence concerning a new drug. He skipped his bond and is still a fugitive from justice.

FDA has 240 investigators, all graduate chemists, who keep close check on food and pharmacy houses. If an investigator suspects a drug shipment, he first purchases a sample. Then, while it is being analyzed in the Washington laboratories, he prepares lists from which to send out recall

*(Continued on page 162)*

# *A Basic Dietary Factor for* CONVALESCENT PATIENTS

THE patient's food tray can ease and speed convalescence. The food should be easily digestible, inviting in appearance and flavor, and thoroughly nourishing.

Experience shows that frequent serving of salads, main dishes and desserts made with Knox Unflavored Gelatine helps fulfill these three functions.

Unlike factory-flavored gelatin dessert powders with their high sugar and acid content, Knox Gelatine is all protein, with no sugar content. With Knox an endless variety of tempting dishes can be made which include fruits, vegetables, meats, eggs and natural juices, with their vitamins and minerals. Physicians recognize the supplementary protein advantages of Knox Gelatine.

*Available at grocery stores in convenient 4-envelope and 32-envelope packages.*


**FREE** DIETARY GUIDE BOOK for CONVALESCENT PATIENTS

Containing authoritative data on feeding the sick and convalescent; a special diet outline for liquid, soft and normal convalescent dietaries; and tested recipes—this booklet is available to you upon request. Write Knox Gelatine, Dept. R-24, Johnstown, N. Y.

# *Questions & Answers*

*All questions received will be answered by letter directed to the petitioner; questions chosen for publication will appear with the physician's name deleted. Address all inquiries to the Editorial Department,* MODERN MEDICINE, *84 South Tenth Street, Minneapolis 3, Minnesota.*

**QUESTION: A patient with tapeworm has great difficulty keeping down preparations of male fern extract. Is there a satisfactory way of masking oleoresin aspidium? Could you suggest a different drug?**

**M.D., Iowa**

ANSWER: *By Consultant in Gastroenterology.* Possibly the aspidium would be tolerated if given in capsules. If a different drug is preferred pelletierine may be used. Pelletierine is especially effective against pork tapeworm, and, as pelletierine tannate, is given in the same way as aspidium. The single dose is 0.25 gm.

**QUESTION: What is the latest information on management of ichthyosis?**

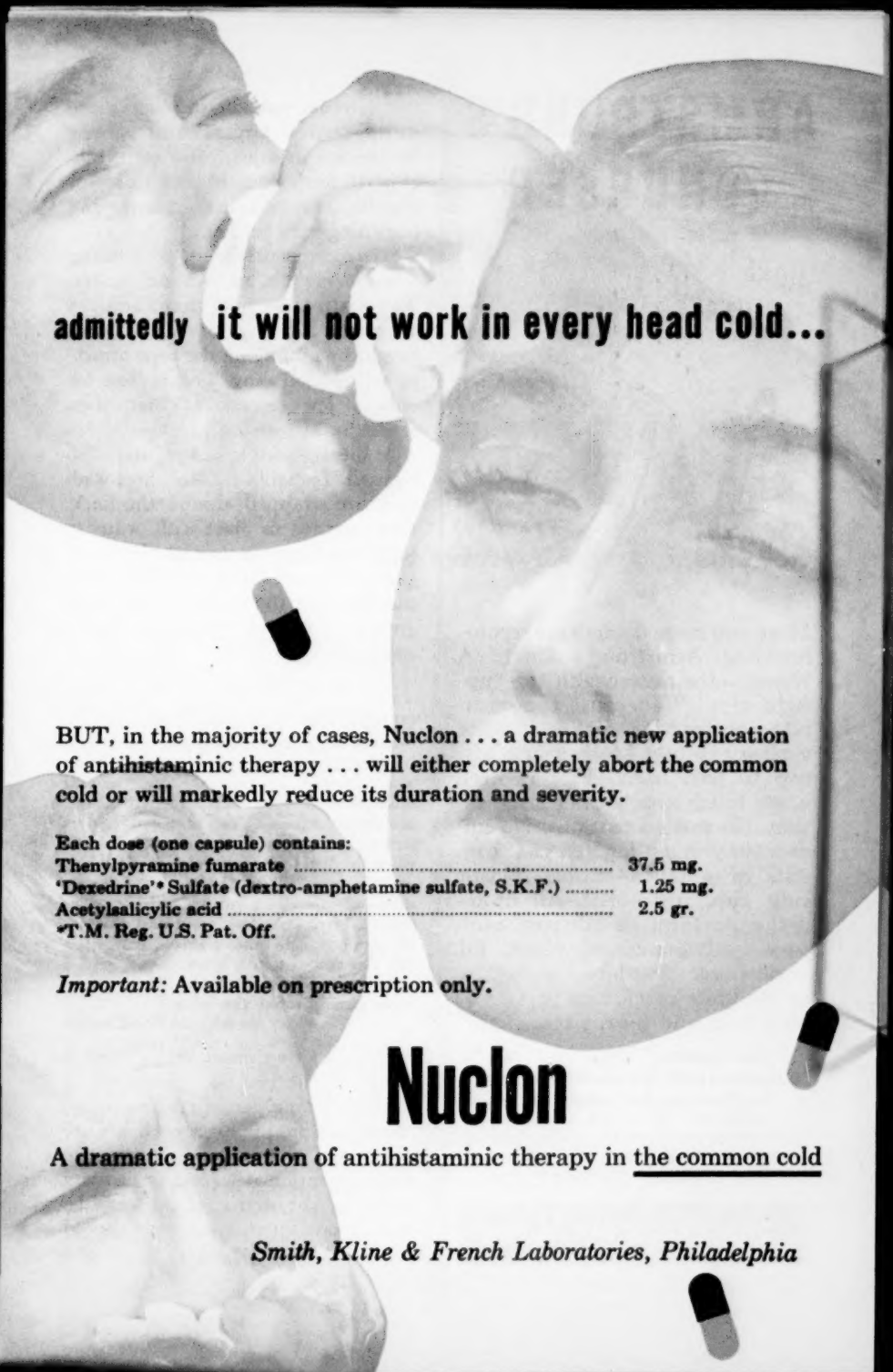
**M.D., Illinois**

ANSWER: *By Consultant in Dermatology.* We have no new information on the management of patients with ichthyosis. The condition is due to abnormal inherited factors which are not subject to modification. In a few instances such individuals seem to improve with administration of vitamin A. Usually this is given orally, though in some instances intramuscular injection is said to give results when oral administration has failed. A trial is probably worth while. Give 150,000 units daily, by mouth, for a period of one month. If the patient does not benefit, there is no advantage in continuing the treatment. Local applications are useful for relief of dryness and usually consist of the application of lanolin or one of the oils or creams generally used for dry skin. The patient should be warned against too frequent bathing and more than the minimum use of soap.

**QUESTION: We have an epidemic here of a form of rheumatoid ailment which attacks one-half of the back of the neck on the left side. I have been suffering intense pain for several months with this same condition. The pain is migratory, but usually stays at the original starting point some time before attacking other areas. Age is not a factor; young and old are susceptible. The climate is very damp in our town, which is situated on the banks of a large river. All methods of treatment, including deep and superficial physiotherapy, have been tried, to no avail. Even freezing with ethyl chloride affords only slight temporary relief. Immobilizing my neck muscles by strapping with adhesive tape helps a little. What would you suggest for relief?**

**M.D., Illinois**

ANSWER: *By Consultant in Rheumatoid Diseases.* The rheumatoid condition may be caused by a virus infection affecting the external spinal accessory nerve. The motor nuclei of



**admittedly it will not work in every head cold...**

BUT, in the majority of cases, **Nuclon** . . . a dramatic new application of antihistaminic therapy . . . will either completely abort the common cold or will markedly reduce its duration and severity.

**Each dose (one capsule) contains:**

| | |
|---|---|
| **Thenylpyramine fumarate** | **37.5 mg.** |
| **'Dexedrine'* Sulfate (dextro-amphetamine sulfate, S.K.F.)** | **1.25 mg.** |
| **Acetylsalicylic acid** | **2.5 gr.** |

*T.M. Reg. U.S. Pat. Off.

*Important:* Available on prescription only.

# Nuclon

**A dramatic application** of antihistaminic therapy in the common cold

*Smith, Kline & French Laboratories, Philadelphia*

the external part of this nerve are in the cervical cord. The nerve may be affected in some forms of meningitis. If sternomastoid and trapezius muscles are spastic, heat, massage and stretching may be used.

Stretching may be done by utilizing a head sling and an overhead pulley. The patient sits in a chair, and the attendant lifts part of the patient's weight by pulling on the rope attached to the head sling. This is done for only a few seconds at first, then gradually increased.

A sheet wadding collar may also be used. Two rolls of 8-in. sheet wadding are wrapped around the neck, then fastened in place with ordinary gauze bandage; six or eight layers of gauze are used. The ends are then tucked under the ears and chin. This gives support and frequently relieves symptoms.

**QUESTION: A woman, now sixty-two, became anemic after giving blood during the war years. Her blood condition was restored to normal after several months' treatment with liver, iron, and multiple vitamins. She also has hypertension and was given nitranitol with phenobarbital and rutin with 250 mg. ascorbic acid daily. She also took heavy doses of salicylates for an arthritic condition. Urticaria developed and in spite of stopping all the above medication for two months, the hives persist and a new outbreak is starting. What could have precipitated the hives?**

**M.D., Oregon**

ANSWER: *By Consultant in Dermatology.* If the eruption has persisted for such a long period after stoppage of medication, the hives probably are not caused by hypersensitivity to the drugs mentioned. Food sensitivity might be the source of the trouble. In this case elimination diets should

*(Continued on page 30)*

# For MAXIMUM THERAPEUTIC RESULTS in Salicylate Therapy

**NEOCYLATE,* the first salicylate-PABA medication to be made available to the medical profession, is optimally effective in all conditions amenable to the action of salicylate.**

*prescribe*

# NEOCYLATE

TRADEMARK

*the original* **Salicylate-PABA Combination**

**PABA (*p*-aminobenzoic acid) enhances the value of salicylate in three ways:**

- **Exerts a rapid and positive effect on the development and maintenance of therapeutic salicylate blood levels**
- **Permits the achievement of therapeutic salicylate concentrations with smaller doses... thus minimizing the danger of untoward effects**
- **Provides extra antipyretic and analgesic action, with an increased sense of well-being**

**IMPORTANT NOTE: Although the inclusion of PABA in NEOCYLATE increases the efficiency of its salicylate content, the dosage schedule must be adapted to the requirements of the individual case and scrupulously followed by the patient. In rheumatoid arthritis, or other arthritic conditions, higher-than-average doses may be needed, even to the point of inducing symptoms of salicylism, e.g., ringing in the ears, during initial dosage schedule. Write for further details.**

**AVAILABLE IN TWO ATTRACTIVE DOSAGE FORMS...**

***"THE MOST FOR THE DOSE"***

***Enlabs*** **NEOCYLATE (Brand of Sodium Salicylate with PABA): Each Entab NEOCYLATE contains: sodium salicylate, 0.25 Gm. (3.85 gr.); para-aminobenzoic acid, 0.25 Gm. (3.85 gr.).**

***Pyrosyl*** **NEOCYLATE (Brand of Sodium Salicylate with PABA [Sodium Salt]): Each teaspoonful (4 cc.) contains: sodium salicylate, 0.32 Gm. (5 gr.); para-aminobenzoic acid (sodium salt), 0.32 Gm. (5 gr.).**

***NONALCOHOLIC, HYPOALLERGENIC, FRUIT-FLAVORED SYRUP.***

**INDICATIONS: Rheumatic fever, arthritis, and other conditions amenable to salicylate therapy.**

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# in arthritis

- *unlike gold and other drugs*

## safe detoxifying colloidal sulfur

- *relieves pain*
- *reduces joint swelling*
- *produces clinical remission even in the most severe cases*

**Sulphocol**® *colloidal sulfur compound*

**ORAL AND PARENTERAL**

Sulphocol Capsules (5 gr.) 1 or 2 after meals. Bottles of 100. Sulphocol Sol (parenteral), 25 cc. vials; 12 and 100-2 cc. vials. 1/4 to 1/2 cc. intramuscularly at 3 to 7 day intervals, gradually increased to 3 cc. Write for literature and samples of Sulphocol Capsules.

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*Manufacturers of Pharmaceutical, Biological and Biochemical Products for the Medical Profession*

**appetite stimulated . . .**
**nutrition improved . . .**
**greater resistance to infection exhibited**

The common complaints of infancy—anorexia, undernourishment, slowness of weight gain, propensity to infection—are less frequently encountered when White's Multi-Beta Liquid is part of the infant's diet routine.

Five drops daily of White's Multi-Beta Liquid raises the average infant intake of all clinically important vitamin B factors to a safe level.

For adults, full supplementation of the essential vitamin B factors is provided with just one teaspoonful of White's Multi-Beta Liquid daily.

***An excellent prescription ingredient . . .***

Palatable, non-alcoholic and stable, White's Multi-Beta Liquid is ideally suited to prescription use. Compatible with such ingredients as: (1) Tincture Nux Vomica, in equal parts, (2) Elixir Phenobarbital, 1 to 4 parts, (3) White's Mol-Iron Liquid, 1 to 8 parts.

White's *Multi-Beta Liquid*

**. . . multi-purpose B complex source**

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be tried. Also there may be focal infection which directly or indirectly produces the discomfort. Possibly, emotional strains and stresses are the cause, as is often the case with chronic urticaria. Changes in type and dosage of the antihistaminic agents are likely to lead to some preparation which will give complete relief.

**QUESTION: What foods should be avoided by a patient on a low-cholesterol diet?**

**M.D., California**

ANSWER: *By Consultant in Internal Medicine.* The following foods contain over 100 mg. of cholesterol per 100 gm: beef kidney, beef liver, lean beef muscle, and sweetbread; dry brewers' yeast; butter; Cheddar, Limburger, and Swiss cheese; whole egg; oysters; pigeon; shrimp; and breast and shank of veal. The following contain over 1,000 mg. per 100 gm: yolk of egg; beef brain.

**QUESTION: A patient of mine, twenty-five years old, menstruates every five weeks. The flow is severe and lasts one week. Following this she has dirty brown discharge for several weeks after menstruation ceases. What causes the discharge? What is the proper treatment, besides dilation and curettage?**

**M.D., Ohio**

ANSWER: *By Consultant in Gynecology.* Retention of old menstrual blood or blood clots within the uterus probably causes the dirty brown discharge following menstruation. The retention may result from abnormally profuse bleeding during the menses, plus some mechanical disturbance, such as cervical stenosis or submucous myoma or polyp. Treatment depends upon findings at dilation and curettage. Occasionally curettage suffices.

*(Continued on page 34)*

A UNIQUE ANALGESIC BANDAGE
PROVIDING CONTINUOUS LOCAL PAIN RELIEF

*plus*

# POLYESTOL

A highly elastic, transparent plastic bandage which gives off 45 to 50 Gm. of methyl salicylate for transcutaneous absorption at a constant rate when in use. The bandage may be applied for a total of sixty hours (never more than ten hours at a time). It can be stored between applications without danger of deterioration.

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**uses** In acute head and chest colds, bronchitis, laryngitis, tracheitis, pharyngitis, pertussis, influenza, measles. Also helpful as palliative of harmful cough in tuberculosis, chronic paranasal sinusitis, tobacco cough.

**formula** Each 5 cc. (1 teaspoonful) of Robitussin contains:
Glyceryl guaiacolate . . . . . 100 mg.
Desoxyephedrine hydrochloride . . . 1 mg.
In a palatable aromatic syrup.

**dosage** Adults: 1 to 2 teaspoonfuls, repeated every 2 to 3 hours as necessary. Children: ½ to 1 teaspoonful according to age, 3 or more times daily.

**available** In pints and gallons.

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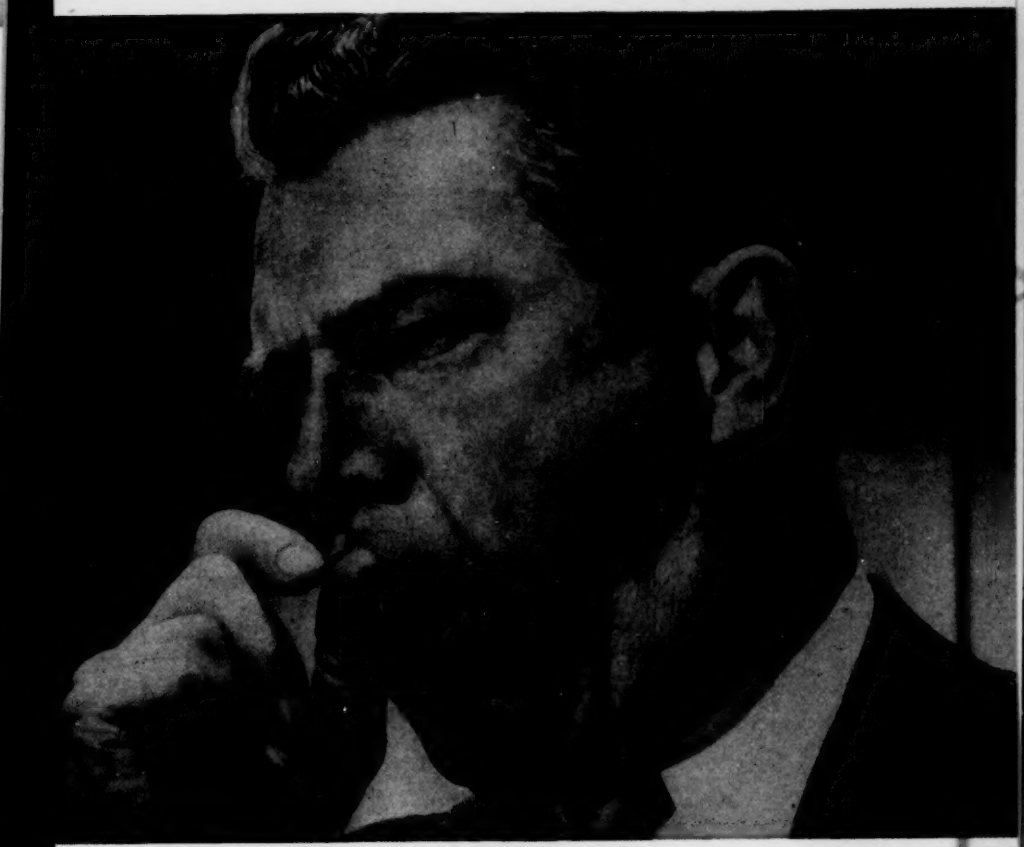

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**To facilitate productive cough . . .**
**to minimize harmful cough**

℞ *Robitussin*

**QUESTION: When can a child with infantile eczema be vaccinated for smallpox?**

**M.D., Ohio**

ANSWER: *By Consultant in Pediatrics.* Infants and children with infantile eczema may be vaccinated with the smallpox virus as soon as there is definite indication that the skin disease has disappeared. It is best to wait at least three months after the last signs of eczema.

**QUESTION: An elderly clergyman has a very severe facial tic that began four years ago. He makes exaggerated facial expressions which interfere with his ability to talk. What is the treatment?**

**M.D., Pennsylvania**

ANSWER: *By Consultant in Neurology.* At the present time there is no specific treatment. In all these cases, careful investigation should be made for a tumor growing on the facial nerve. A tic of such severity as to interfere with the patient's speech is unusual and this disturbance alone should direct attention to the possibility of organic involvement such as a small neuroma.

**QUESTION: Is leukoplakia of the cervix really precancerous? What is the effect of pregnancy on these lesions? Is amputation of the cervix, with the possibility of subsequent abortion, justified? Is leukoplakia common after cauterization?**

**M.D., Virginia**

ANSWER: *By Consultant in Gynecology.* Leukoplakia is a clinical term which may indicate either a benign or malignant lesion. Most gynecologic pathologists believe that leukoplakia of the cervix is not precancerous, but cases have been reported in which cancer was subse-

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# RHINALGAN*

**Long-lasting nasal decongestant with no systemic effect (Pressor or Respiratory) in**

**DOHONY SPRAY-O-MIZER***

(Combination Spray and Dropper)

*Clinical and laboratory tests have proven:*

**NO rise in bloodpressure**
**NO rapid pulse**
**NO wakefulness, restlessness or nervousness**
**NO smarting or stinging**
**NO secondary vasodilation...**

**follow the local use of RHINALGAN**

*Trade Mark—Pat. Pend.


*Pleasant*

*Efficient*

*Non-toxic*

*Bactericidal*

**FORMULA: Desoxyephedrine Saccharinate 0.50% w/v in an isotonic aqueous solution with 0.02% Laurylammonium saccharin. Flavored. pH 6.4.**

**SUPPLIED: 30 grams (1 fl oz.) in Dohony Spray-O-Mizer (Combination Spray and Dropper). Also for Doctor's office and Hospital use—in Pint bottles.**

**FOR TOPICAL APPLICATION—INDICATIONS include: common cold, allergic and hypertrophic rhinitis, sinus infections; for pre and post-operative shrinkage of nasal mucosa; as a diagnostic aid in office procedures. ESPECIALLY SUITABLE FOR INFANTS AND CHILDREN.**

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quently found in such lesions. Pregnancy should have no effect on a benign lesion. A shallow amputation of the cervix may be performed in order to examine all parts of the lesion for malignant cells. An amputation that is not deep should not contribute to abortion. Leukoplakia is not common after cauterization of the cervix.

**QUESTION: Does promiscuous use of antibiotic troches and lozenges through prescriptions or purchase over drugstore counters account for some allergic reactions that might preclude use of these antibiotics when vitally needed?**
**M.D., Texas**

ANSWER: *By Consultant in Pharmacology.* In my opinion, promiscuous use of antibiotic troches and lozenges through prescriptions and purchases over drugstore counters may account for some allergic reactions that might preclude the use of antibiotics when they are needed in treatment of a severe condition.

**QUESTION: What is the Fantus test for chloride in urine?**
**M.D., Washington**

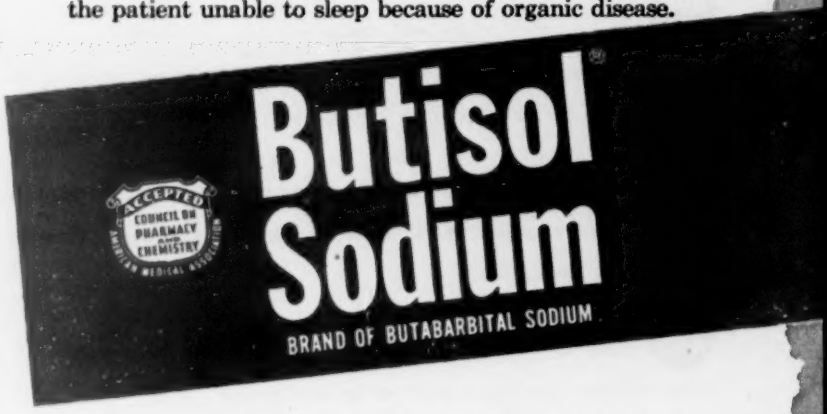
ANSWER: *By Consultant in Laboratory Technics.* To 10 drops of urine in a test tube, add 1 drop of 1:5 potassium chromate solution. The fluid assumes a distinctly yellow color. Using a dropper of the same caliber, add a 2.9% silver nitrate solution, drop by drop, until a permanent and distinct color change to red-brown occurs. The color change is caused by the formation of silver chromate. The number of drops required to produce the color change expresses in grams the content of chloride per liter of urine.

*(Continued on page 40)*

# *selective "intermediate" sedation in insomnia*

". . . there are patients who fall asleep without drugs, but who awaken in the early morning and toss restlessly for the remainder of the night. This is common in aged persons. For these the ideal hypnotic is one with a delayed onset of action and a less intense but more prolonged depression. Butabarbital Sodium is extremely useful in these instances."[1]

This author suggests Butisol Sodium for the management of the tense, worried, nervous insomniac rather than the patient unable to sleep because of organic disease.




The action of Butisol Sodium is "intermediate between the fast-acting derivative, pentobarbital, and the longer-acting barbital and phenobarbital."[2]

It is destroyed fairly rapidly in the body.[2] With proper regulation of dosage there is no cumulative action and a minimum of lethargy and "hang-over."

**DOSAGE FORMS:**

Elixir Butisol Sodium, 0.2 Gm. (3 gr.) per fl. oz., green.
Tablets, 15 mg. (¼ gr.), lavender
Tablets, 30 mg. (½ gr.), green
Tablets, 50 mg. (¾ gr.), orange
Tablets, 0.1 Gm. (1½ gr.), pink
Capsules, 0.1 Gm. (1½ gr.), lavender
CAUTION: Use only as directed.

1. Drippe, R. D.: Selective Utilization of Barbiturates, J.A.M.A. *139*:148-150 (Jan. 15) 1949.
2. New and Nonofficial Remedies, Council on Pharmacy and Chemistry, A.M.A., J. B. Lippincott, 1949, pp. 456-457.


**McNEIL LABORATORIES, INC., PHILADELPHIA 32, PENNSYLVANIA**

**QUESTION: How can toxoid injections produce immunity if an attack of diphtheria does not leave any lasting immunity?**

**M.D., New York**

ANSWER: *By Consultant in Immunology.* The constitutional symptoms of diphtheria are due to toxins formed at the site of the lesion caused by *Corynebacterium diphtheriae.* The toxoid given for prophylaxis has the purpose of stimulating sufficient antitoxin in the recipient to counteract the effect of diphtheria toxin should the subject acquire the disease. Antitoxin may be used to confer passive immunity, and toxoid-antitoxin mixtures have also been advocated. About 80% of the adult population have antitoxin in the blood.

**QUESTION: Would you outline a recommended course of therapy for proved torula meningitis?**

**M.D., New Jersey**

ANSWER: *By Consultant in Neurology.* There is no specific treatment for torula meningitis. Therapy is strictly symptomatic and prognosis should be extremely guarded.

**QUESTION: I have a patient with what appears to be *Trichomonas vaginalis.* The condition clears up promptly with treatment but recurs. The organism has not been found since the first smear. Could the infection involve the uterus? Her husband has had a fungous growth on his penis. What form of treatment should I use?**

**M.D., Wisconsin**

ANSWER: *By Consultant in Gynecology.* If the trichomonas organism could not be found following the first smear, the possibility of a different type of vaginitis should be considered. Since the husband has a fungous in-

fection on the penis, examination should include studies for *Monilia* or other types of fungus in the vaginal secretion. Involvement of the uterus is extremely rare in either *Trichomonas* or *Monilia* infestations. The treatment of the husband should be determined by the type of fungous infection.

**QUESTION: A girl of twelve has been grinding her teeth in her sleep, with great force, since the age of five. She is 60½ in. tall and weighs 123 lb.; her obesity is entirely due to bad eating habits. All examinations, including x-rays and blood fraction determinations, are normal. Nothing that we have tried has stopped this teeth grinding. What would you suggest?**

**M.D., Texas**

ANSWER: *By Consultant in Pediatrics.* If this patient's obesity is due to bad eating habits, one may conclude that her daily schedule of living is not of the best. Her mealtimes and periods of activity and rest must be regular. The school adjustment must be good and the home environment a quiet one, and everything should be done to make the child feel secure and at ease.

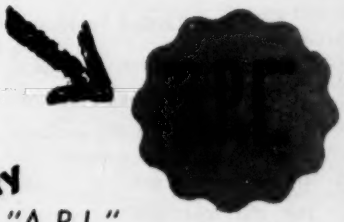
**QUESTION: A pelvic operation eight years ago caused cessation of the menses, except for monthly spotting. The patient, now thirty-six years of age, has premenstrual tension. She has been advised to receive 1 or 2 injections of testosterone per week for two weeks prior to bleeding. Is this therapy effective in premenstrual tension? Is the dosage safe? For how long may testosterone be given without the occurrence of secondary sexual changes?**

**M.D., New York**

ANSWER: *By Consultant in Gynecology.* One or two injections of 25 mg. testosterone is a safe dosage if limited to two weeks of the month.

*when you* **specify** *"A. P. L."*

you obtain a dependable, biologically standardized chorionic gonadotropin derived from human pregnancy urine.



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you are assured of a high potency chorionic gonadotropin which has been used successfully in the treatment of chronic cystic mastitis, threatened abortion, functional uterine bleeding, cryptorchidism, hypogenitalism, impotence, and Fröhlich's syndrome.

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you have a choice of two forms as follows:

***Dry Form*** (to facilitate administration of massive dosages)

No. 972—Each package provides:

1. One "Secule"* containing 20,000 I. U.
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No. 500—500 I. U. per cc.—10 cc. vials

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This is below the amount that usually produces masculinizing changes. The effect of testosterone in premenstrual tension is questionable but has been suggested, as have ammonium chloride and estrogens. Ammonium chloride alone is usually effective.

**QUESTION: What is the treatment for psoriasis of the nails?**

**M.D., New York**

ANSWER: *By Consultant in Dermatology.* Psoriasis of the nails produces minute pits, demonstrating a hidden inflammatory process of the nail bed. This type of involvement is benefited only by x-ray therapy and not by local applications. Sometimes the psoriasis takes the form of excessive scaling under the free margins of the nails. Local applications are moderately successful with this condition. A third form of this disease develops under the visible portion of the nail in the form of deep red or brown discolored areas. These, too, are improved by x-ray treatment.

**QUESTION: About three months ago I delivered a primipara, age thirty. The baby weighed 7 lb., 9 oz. Low forceps were used with episiotomy and even then delivery was fairly hard. The baby had a cephalhematoma with a diameter of about 2 in. Since then there has been little change. What treatment should I institute, or will the swelling disappear spontaneously?**

**M.D., Tennessee**

ANSWER: *By Consultant in Obstetrics.* Cephalhematoma usually resorbs completely, but occasionally a small calcified nodule is left. Treatment in this case should be expectant. Intervention is rarely indicated even when residua occur.

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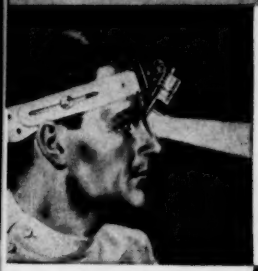

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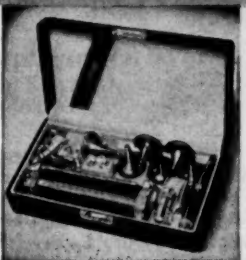

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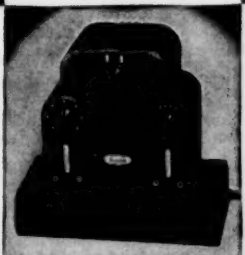

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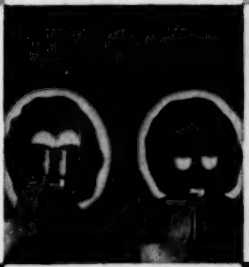

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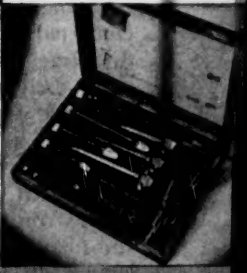

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# *Forensic Medicine*

COMPILED BY ARTHUR L. H. STREET, LL.B.

**PROBLEM: A California physician's license was suspended on the ground that he had been convicted of an offense involving moral turpitude—unlawful narcotic sale. But, before the suspension, the doctor had been released in the criminal case from probation and from the charges against him, because the court permitted him to change his plea of guilty to not guilty. Did the Board of Medical Examiners exceed its powers in suspending the license?**

**COURT'S ANSWER: No.**

The doctor unsuccessfully relied upon a statute which declared that one discharged from a conviction, as he was, "shall thereafter be released from all penalties and disabilities resulting from the offense . . . of which he has been convicted."

The California Supreme Court approved a lower court's decision (200 Pac. 2d 128) that the statute does not preclude the Board from disciplining a physician who has been convicted of a crime, despite his discharge from that conviction. The court believed that the discharge does not expunge the crime in the sense that the pardoned offender occupies the position he had if he had never been prosecuted or convicted. It was conceded by the doctor that the Board could have suspended the license on making an independent finding that he had made an unlawful narcotic sale. The doctor's legal counsel relied upon a contention that a suspension could not be grounded upon a court conviction that had been set aside under the circumstances above stated (206 Pac. 2d 1085).

Three dissenting judges were of the opinion that the "penalties and disabilities" from which the doctor had been released in the criminal prosecution included the effect of his conviction upon the right to suspend his license.

**PROBLEM: The plaintiff, a surgeon, bought a private hospital from defendant's brother, who had been associated with the defendant in practice at the hospital. Defendant agreed in writing that, because the good will of the practice was transferred to plaintiff, defendant would not, within ten years, maintain an office in the county. The defendant was to be permitted to make house calls within the county from an office in an adjoining county. Defendant almost immediately set up a "Health Institute, Clinic, and Pharmacy" in the town in which the hospital was located. Was plaintiff entitled to an injunction against defendant?**

**COURT'S ANSWER: Yes.**

The Georgia Supreme Court said that although the argument "that contracts of this nature between physicians tend to the public detriment, in that there is an urgent need for doctors to alleviate the pain and suffering of the public" presented a

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50,000 UNITS* IN ONE DROPPERFUL

*White's* **dram-cillin** —for children and adults—the pleasant palatability which assures round-the-clock dosage—high potency in convenient dosage:

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**SUPPLIED**

**DROP-CILLIN**—Supplied in 9 cc. "drop-dosage" bottles containing 600,000 units of penicillin. Solution is pink in color. Accompanying calibrated dropper (filled to mark) delivers approximately 20 drops (0.75 cc.) containing 50,000 units of penicillin.*

**DRAM-CILLIN**—in 60 cc. "teaspoonful-dosage" bottles containing 1,200,000 units of penicillin. Solution is ruby-red in color. Each teaspoonful (approximately 5 cc.) provides 100,000 units of penicillin.*

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forceful reason why doctors *should not* enter into such contracts, the court could not abrogate the contract.

The court rejected further argument that, because defendant did not own any interest in the hospital property, there was no good consideration to support his agreement to discontinue practice in the county for ten years. The fact that plaintiff bought defendant's and his brother's joint practice as part of the deal for purchase of the hospital furnished ample consideration (55 S. E. 2d 605).

**PROBLEM: In a prosecution for practicing the healing art without a license, a death certificate reciting the cause as bronchial cardiac asthma and bearing as signature the defendant's name followed by "M.D." had been filed with the state board of health. A similarly signed certificate as medical examiner on an application for life insurance was also offered in evidence. But there was no proof that defendant signed either paper. Was he legally convicted?**

**COURT'S ANSWER: No.**

The Tennessee Supreme Court, in ordering dismissal of the prosecution, rested its decision primarily upon the lack of proof as to the genuineness of the signatures. The court said that it was insufficient proof to show a similarity between the signatures and one that purported to be a genuine signature on an unrelated document.

But the court stated that even if it be assumed that defendant signed the certificates in question, "it would fall far short of showing that he was practicing the healing art." As to the death certificate, there was testimony that defendant had gone to dece-

*(Continued on page 52)*

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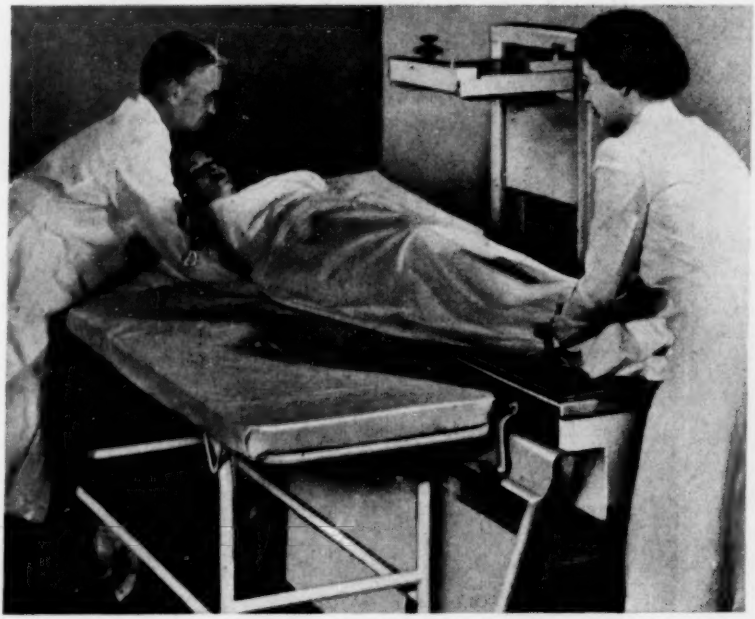

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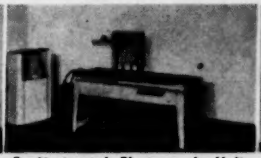


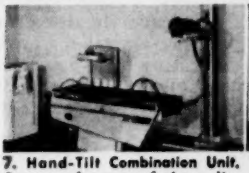
**2. Horizontal Fluoroscopic Unit.** The basic horizontal table can be converted for fluoroscopy by adding a fluoroscopic carriage, screen unit and a tube mounted under the table.

**3. Horizontal Radiographic Unit.** The horizontal Bucky table augmented by a stationary anode tube mounted on a tube stand and floor rail provides facilities for horizontal radiography.

**4. Horizontal Combination Unit.** One tube serves as the x-ray source both over and under the table, in this Maxicon combination for both radiography and fluoroscopy.

**5. Hand-Tilt Fluoroscopic Unit.** Fluoroscopy from Trendelenburg to vertical is easily accomplished with this unit. Panels in the table-front opening shield you from scattered radiation.

**6. Hand-Tilt Radiographic Unit.** Effortless angulation of table provides every facility for radiography in angular positions. The 100-ma generator and control complete the unit.



**7. Hand-Tilt Combination Unit.** Separate features of the radiographic and fluoroscopic models in this combination unit permits use of one tube for radiography and fluoroscopy.

**8. Motor-Driven Fluoroscopic Unit.** Operator's hands are free, for palpation of patient and manipulation of controls. Scattered-radiation protection and automatic field-limiting device are important.

**9. Motor-Driven Radiographic Unit.** Variable-speed angulation of the Maxicon table is controlled by two convenient foot pedals. All degrees of tilt from Trendelenburg to vertical are self-retaining.

**10. Motor-Driven Combination Unit.** Composite x-ray facilities give complete radiographic and fluoroscopic service. Separate rotating-anode tube units, 200-ma generator and Maxicon control increase capacity of department.

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dent's home, but "nothing to show he administered any drug, or medical potion, or rendered any medical aid to the sick boy." As to the certificate as medical examiner on the application for life insurance, "these applicants were not seeking any medical aid of any kind and none was rendered" (221 S. W. 2d 801).

¶While many, if not most, courts would probably agree that proof was insufficient in the Tennessee case to show that defendant signed the certificates, in many states courts would probably decide that appending the abbreviation, "M.D.," on such certificates constitutes holding oneself out as a doctor without being licensed, and is an offense. But, of course, this would depend upon the wording of the statutes of the particular state. A standard legal treatise says: "In many states there are statutes which, although varying in phraseology, are to the same general effect that a person shall be regarded as practicing medicine . . . where he holds himself out as a physician or publicly professes to treat, cure, or heal, . . . such as by advertisement or other public announcement, . . . or using in connection with his name, the title, 'Doctor,' 'Dr.,' or 'M.D.,' or any other word or abbreviation indicating that he is engaged in treating human ailments or diseases" (48 Corpus Juris 1077, sec. 24).—A.L.H.S.

**PROBLEM: A seven-year-old child died immediately after receiving chloroform in preparation for an operation upon his fractured arm. The doctor had first determined by stethoscopic examination that the patient's heart was functioning normally and that there was no pulmonary condition that would be aggravated by an inhalation type of anesthesia. Did the doctor follow proper practice and thereby exonerate himself from liability for the child's death?**

**COURT'S ANSWER: Yes.**

The Louisiana Court of Appeals, First Circuit, upheld a judgment of a lower court, dismissing the moth-

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*Ault, G. W. & Madigan, E. P.: Am. J. Surg., 77:352, 1949.

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er's suit for damages (39 So. 2d 196). The decision was strongly influenced by the expert testimony of physicians and surgeons that they used chloroform in setting fractured arms, after the type of examination the doctor had made in this case.

As to whether an overdose of chloroform had been administered, the Court of Appeals found that the evidence refuted that claim on the mother's part, saying:

> When chloroform is well diluted with air and the patient dies, it is with respiratory failure first and cardiac failure later or within several minutes, due to the lack of oxygen, and . . . when chloroform is administered too quickly and in too large amounts so that it is not well diluted with air, the heart stops beating first . . . and in the instant case, there was respiratory failure first and the heart was beating for several minutes afterwards. It is apparent, therefore, that this child did not die from an overdose . . . but as a result of a toxic condition produced by the chloroform."

**PROBLEM: A Rhode Island statute requires that a death certificate state the cause. A certificate gave myocardial insufficiency and myocardial infarction as the cause of death of a former foundry worker who had become totally incapacitated for work nearly two years before and was receiving workman's compensation. Was the certificate so conclusive as to the cause of death as to preclude the doctor who signed it from testifying that scrotal hernia, which had incapacitated the decedent, was a contributing and causative factor in the death? The doctor was testifying in support of the application of the decedent's dependent for compensation.**

**COURT'S ANSWER: No.**

The Rhode Island Supreme Court said that, although the statute requires a certificate to include the cause or sequences of causes, primary

*(Continued on page 58)*

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**REFERENCES: 1.** Sevringhaus, E. L.: The Rhode Island M. J. 30:507-510 (July) 1947. **2.** Farell, D. M.: Med. Clinics of N. America (Nov.) 1948, p. 1525. **3.** Gray, L. A.: Kentucky M. J. 45:192-197 (June) 1947. **4.** Christy, C. J.: Am. J. Obst. & Gynec. 50:84-87 (July) 1945. **5.** Finkler, R. S.: J. Clin. Endocrin. 9:89-94 (Jan.) 1949. **6.** Cummings, H. H.: J. Michigan St. M. Soc. 48:713-716 (June) 1949.

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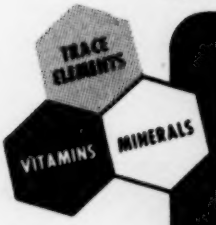


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**bibliography:** (1) Donovan, M. A.: New York State J. Med. *45*:1756, 1945. (2) Reaser, P. B., and Burch, C. E.: Proc. Soc. Exper. Biol. & Med. *63*:543, 1946. (3) Griggs, D. E., and Johns, V. J.: California Med. *69*:133, 1948. (4) Chapman, D. W. and Schaffer, C. F.: Arch. Int. Med. *79*:449, 1947. (5) Modell, W.; Gold, H., and Clarke, D. A.: J. Pharmacol. & Exper. Therap. *84*:284, 1945. (6) Finkelstein, M. B., and Smyth, C. J.: J. Michigan M. Soc. *45*:1618, 1946. (7) Gold, H., and others: Am. J. Med. *3*:665, 1947.

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and contributory, it did not state a rule of evidence which would make the certificate conclusive as a matter of law, notwithstanding the sworn testimony of the doctor by which the causes in fact were elaborated more particularly. The court said that the statute "primarily relates to the purposes of health, vital statistics and investigation of deaths that might be attributable to violence or crime" (68 Atl. 2d 96).

**PROBLEM: Was a hospital liable for a patient's injury, resulting from disregard of the attending doctor's direction to install side boards on the bed, if the hospital was operated as a charitable institution?**

**COURT'S ANSWER: Yes.**

The Appellate Division of the New York Supreme Court, Second Department, decided that a jury was justified in concluding from the evidence that the doctor had determined that side boards were necessary, and the court added that a charitable hospital was as liable for injury resulting from negligent disregard of the direction as was a hospital operated for profit (92 N.Y. Supp. 2d 101).

**PROBLEM: In a personal injury suit did the trial judge err in permitting a medical expert to testify to conclusions reached by him on examining roentgenograms which were not produced in court, their nonproduction not being excused.**

**COURT'S ANSWER: Yes.**

In reaching this decision, the Michigan Supreme Court applied the well-established rule of law that the factual basis for a medical opinion must be shown in a court trial (39 N. W. 2d 220).

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*1. Slaughter, D.: South Dakota J. Med. & Pharm., 1:425, 1948*

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# *Symposium on Physical Medicine and Rehabilitation*

## Foreword

HOWARD A. RUSK, M.D.*
*New York University–Bellevue Medical Center, New York City*

ONE of the most significant developments in medicine since the close of World War II has been the increased importance given by medical schools, hospitals, and physicians to physical medicine and rehabilitation.

Although the physician has always been interested in the provision of more complete medical care for his patients, only within recent years has the concept of total medical care become an integral part of medical teaching and have hospitals, clinics, and other institutions planned programs to make these services available.

The concept of the "third phase of medicine," which takes the patient from the bed to the job, was developed during the last war, when for the first time, the nation's resources were directed toward the single objective of giving the disabled individual every opportunity for becoming once more a useful member of his community.

### EARLY EFFORTS IN REHABILITATION

Immediately after World War I, interest developed in rehabilitation opportunities for the disabled but, unfortunately, the concern was generally short lived. From this stimulus, however, came some pioneer institutions and some needed legislation, such as the Federal Vocational Rehabilitation Act of 1920.

The failure of the movement to become an accepted part of medi-

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cine can be attributed to the fact that it was restricted largely to guidance, trade training, and the purely vocational aspects of the problem. An occupational rehabilitation program was planned to "train around" the man's disability rather than to reduce or eliminate his incapacity through medical procedures.

In many instances, a comparatively large amount of time and money was necessary for vocational rehabilitation when, by the expenditure of a few weeks' time and a modest sum, the patient's physical limitations could have been substantially reduced and his capacities for employment greatly augmented. Such restriction of policy made it impossible for the state vocational rehabilitation programs operating under the Federal Office of Vocational Rehabilitation to give adequate service. Their failure is shown by the fact that, until the basic philosophy of the program was changed by the Barden–LaFollette Act of 1943, only 210,000 persons were rehabilitated in twenty-three years, although over 1,000,000 persons were in need of such aid at any given time during that period.

### NEW CONCEPTS

Although the underlying philosophy of the third phase of medical care is based on logic and common sense, little fundamental and clinical research in medical rehabilitation was carried out until just a few years ago.

The military service studies, the inquiries of Keys, Barr, and others into the deconditioning phenomena of bed rest, the numerous reports of Powers, Whipple, Dock, Menninger, Ghormley, and others on bed rest as it affects their particular specialties, all are indicative of the recently increasing mass of scientific data on medical rehabilitation. Work in the field has gained further incentive from studies of the success of impaired workers in industry, the economic values of rehabilitation as shown by the Office of Vocational Rehabilitation, and the progress of the Veterans Administration Medical Rehabilitation Program.

Indicative of the growing recognition of physical medicine and rehabilitation as an integral part of medical care and teaching is the change in the name of the Council on Physical Therapy of the American Medical Association in 1945 to the Council on Physical Medicine, and its subsequent change in 1949 to the Council on Physical Medicine and Rehabilitation.

In 1947, upon the recommendation of the Advisory Board of Medical Specialists, an American Board of Physical Medicine was established to qualify specialists in this field of medicine. In May 1949, this group became the American Board of Physical Medicine and Rehabilitation. Final step in the recognition of physical medicine and rehabilitation as a full-fledged medical specialty came in

June 1949, when the House of Delegates of the AMA voted to establish within its organization, for the first time, a permanent section on Physical Medicine and Rehabilitation.

Much of the credit for this expansion must be given to the Baruch Committee on Physical Medicine and Rehabilitation, established in 1944 by Mr. Bernard M. Baruch in honor of his father, Dr. Simon Baruch, noted pioneer in this field.

When the committee was organized, only 5 approved residencies and fellowships in physical medicine were available annually in the United States in but 3 medical centers as compared with nearly 100 such residencies and fellowships now available at 34 medical centers. Whereas less than half the nation's medical schools offered instruction in physical medicine and rehabilitation at that time, such instruction is now given in nearly all.

### IMPLICATIONS OF CHRONIC DISEASE

Today, we in medicine are faced with a new phenomenon—an aging population—which we, paradoxically, have brought upon ourselves by reducing the incidence of death from acute, communicable disease. Two thousand years ago the average length of life was 25 years; in 1900 it was 49; today it is 66. At the turn of the century, 1 person in 25 was sixty-five years of age or older; it is estimated that by 1980 the ratio will be 1 in 10.

What are the medical implications of this increasing age level? First, as people become older, their medical needs change and they demand more medical service. In 1940, the 26.5% of the nation's population over forty-five required over half the nation's medical care. By 1980, persons over forty-five will probably constitute nearly half the population. Today, we are busily studying and discussing the best plans for increasing and distributing medical services, yet the growing age level indicates that by 1980 we may need nearly double the amount of medical service available today.

Secondly, lacking specific measures in the cure of many chronic diseases, medicine must look to rehabilitation to teach those afflicted by disability to live and work as effectively as possible. Until medicine finds specific answers to the problems of the diseases of the heart and circulation, rheumatic fever and arthritis, cerebral palsy, multiple sclerosis, poliomyelitis, and the other crippling diseases, we must utilize the technics of physical rehabilitation, psychology, social service, and the auxiliary specialties to teach the disabled to live within the limits of their disabilities but to the full extent of their capabilities.

In visualizing the disabled, the layman is inclined to think of war veterans, yet the extent of physical disability among our civilian population is far greater. For example, the number of persons

permanently disabled in farm accidents in 1945 was 4 times the number of servicemen permanently crippled in the bloody assault on Iwo Jima.

Each year in this country the number of persons permanently incapacitated from accidents totals nearly 50% more than the number of American servicemen disabled in combat during the entire four years of the war. In addition, 8,000,000 to 9,000,000 persons suffer from disease of the heart and circulation, 6,850,000 from rheumatism and arthritis, 300,000 from cerebral palsy, and a probably like number from the residual effects of poliomyelitis; there are 1,000,000 known and 1,000,000 unknown cases of diabetes mellitus, 500,000 to 1,500,000 persons with epilepsy, 400,000 people who have undergone major amputations, and millions who suffer from disorders of vision, hearing, and speech.

These are the numbers, but they cannot tell the story of pain, anxiety, and suffering or all the difficult secondary problems that disease and disability leave in their wake. Aside from the pain and personal and family grief, the economic costs of disease and disability are staggering.

As the population ages, we can expect the extent of physical disability to increase progressively. Since chronic disease is usually nonreportable, reliable statistics on its proportions are hard to find. Although a census of such conditions has been proposed on several occasions, no complete survey has ever been made.

The most comprehensive source of information at present is the National Health Survey, conducted by the U.S. Public Health Service in 1935 and 1936. The survey covered 800,000 families in 83 cities and 23 rural areas of 19 states. Other samples bear out the fact that this National Health Survey is the best source available for such statistics, though the results are undoubtedly conservative.

The survey reported that some 23,000,000 persons in the United States were at that time handicapped to some extent by disease, accident, maladjustment, or former wars. In a more recent study in New Haven, conducted by the School of Public Health of the Yale University College of Medicine, 121 persons for each 1,000 in the population were found to have chronic illness; one-third of this number were totally disabled; and one-third were below twenty-five years of age.

One of our great medical needs today is provision of total treatment of chronically ill patients in terms of the everyday problems of living. Many such patients cannot become employable, but a large number can be rehabilitated in sufficient self-care to live independent, dignified, and happy lives at home, requiring a minimum of aid from other members of the family.

Although we have in this country the finest institutions in the

world for definitive medical care and vocational training, but a handful of civilian agencies and organizations outside the military services and the Veterans Administration are equipped to provide the retraining in physical skills which is requisite for the vocational training of a patient with physical disabilities.

The physician has thought too much about the physiologic and clinical aspects of the patient's disability; the vocational counselor too frequently has thought only in terms of the physical skills that can be utilized in employment. Between the two phases of rehabilitation, however, is a wide area which the physically handicapped person must pass after definitive medical care is completed and before he is ready to undergo vocational training. He needs physical retraining in skills required for the activities of daily living and common to all types of work.

Except in a few rare cases, the physically handicapped person must be retrained to walk and travel, to care for his daily personal needs including toilet facilities, to use normal methods of transportation, to apply and remove his own prosthetic devices, and to communicate either orally or in writing. These are such simple matters that they are frequently overlooked, yet the personal, vocational, and social success of the handicapped person is dependent upon them.

Although these procedures can best be acquired through a comprehensive, integrated program which utilizes the skills of the physical, the occupational, and the speech therapist, the vocational counselor, the clinical psychologist, and other personnel, many can be taught successfully by the general practitioner with the assistance of a nurse and members of the patient's family.

With the growing increase in chronic disability resulting primarily from an aging population, medical care cannot be considered complete until the patient has been trained to live and to work with what he has left. Rehabilitation is a medical responsibility.

# The General Practitioner's Responsibility

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At exactly 8:15 on the morning of August 6, 1945, Japanese time, an atomic bomb flashed over Hiroshima and opened the atomic era—the age of physics.

Physicians who fostered the development of medical physics had frequently deplored the apathy of their colleagues toward the growing importance of biophysics, but this indifference practically disappeared when the first military bomb was dropped. Seldom, if ever, have pioneers had a more devastatingly convincing demonstration of the tremendous power of the agencies in which they are interested than did the supporters of the physical sciences when the atomic bombs fell on Hiroshima and Nagasaki.

Physicists in the quest for knowledge have built a telescope at Mt. Palomar which will make objects visible that are twice as far away as those seen through the Mt. Wilson telescope; with the latter, stars 500 million light years distant have been photographed—and light travels 6 trillion miles a year. With the new telescope, space may be searched for a distance of 6 billion trillion miles, toward the very limits of the infinitely large.

The question of whether the universe is finite or infinite may be resolved. Small wonder that Goodman wrote:

> Man, through the vast new lens at Palomar,
> May bridge the ultimate void from star to star.

Physicists have also developed for medical research the electron microscope, which will magnify objects photographically 100,000 times. This new microscope can render objects visible which are a fraction of an angstrom unit in size. An angstrom is 1/254 millionth of an inch. Thus, scientists are stretching down toward the very limits of the infinitely small.

Physics has given us the power to see with our own eyes objects which are almost infinitely small or through distances which are almost infinitely large. The Palomar telescope and the electron microscope indicate the magnitude of the fields explored by physical science, just as the atomic bombs indicate the power of physical agents.

The modern applications of physical medicine are closely integrated with the amazing development of physical forces in the world as a whole. One cannot be discussed without considering the other. The cataclysmic changes that opened the age of physics were attained through the knowledge of physicists; and through their efforts, too, must come some of

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the steps toward bending the great forces of physics to man's benefit rather than to his annihilation.

In 1946, Raymond B. Fosdick, president of the Rockefeller Foundation, said: "Man is confronted with the tragic irony that when he has been most successful in pushing out the boundaries of knowledge, he has most endangered the possibility of human life on this planet. . . . Can education and tolerance and understanding run fast enough to keep us abreast with our mounting capacity to destroy?"

Having faced squarely the fact that these new physical forces possess fearful potential dangers, can we see any ray of hope piercing the dark clouds threatening global disaster?

Yes! Several feeble beams appear through the gloom. Bernard M. Baruch has remarked, "Behind the black portent of the new atomic age, lies a hope which, seized upon with faith, can work our salvation. . . . Science, which gave us this dread power, shows that it can be made a giant help to humanity."

And J. H. McGraw, Jr., sounded the keynote when he said, "At one giant stride our scientific and technological development has so far outdistanced our social engineering that we have no choice but to turn our full powers of creative imagination to control the forces we have unleashed and to bend them to man's use rather than to his destruction."

In 1948, Fosdick stated, "All centuries are dangerous. . . . It is the business of the future to be dangerous. . . . On the whole, the great ages have been the unstable ages. This is the ray of hope that lightens the darkness of the present hour."

Our duty as physicians in this age of physics then becomes evident. We must accept the fact that we are living in a dangerous and exciting age which, because of this very fact, may become the greatest of all ages. We must each strive to do a little bit to turn these physical forces of vast magnitude and tremendous power to man's benefit. No single one of us can do much, but if all work toward the common goal of harnessing these physical forces and reining them along roads which lead to good instead of evil ends, our united effort may benefit rather than destroy mankind.

### PHYSICAL MEDICINE

Physical medicine can really be thought of as applied biophysics. The specialist in physical medicine and rehabilitation applies ultraviolet radiation, infrared radiation, short- and long-radio waves, and also alternating-current waves. In addition to all this, the field of kinesitherapy, that is, the employment of therapeutic exercise and mechanical devices, includes hydrotherapy, cryotherapy, massage, manipulation, occupational therapy, and physical rehabilitation of the disabled.

The medical specialist in the field is now commonly called a physiatrist. The term stems from the two Greek words *physis,* pertaining to physical phenomena, and *iatrikos,* pertaining to a healer or physician. Thus a physiatrist is a physician who employs physical agents.

Occupational therapy can be defined as medically prescribed activity which has a therapeutic objective.

Rehabilitation can be defined as

the preparation of the patient, physically, mentally, socially, and vocationally, for the fullest possible life compatible with his abilities and disabilities.

The general medical practitioner has many opportunities to employ physical medicine and rehabilitation in the great universal struggle to guide the physical sciences away from destructive and toward constructive applications.

The studies in physical medicine which give the greatest satisfaction are those directed toward the conversion of the physical forces once employed for war to peaceful medical applications which may benefit mankind.

### THERAPEUTIC WEAPONS

The three great physical weapons of war which the medical profession is now striving to convert to medical uses are radar, which is said to have won the battle of Britain; atomic energy, which hastened the final defeat of Japan; and sonar, which aided in our supremacy of the seas.

*Radar*, or microwave diathermy, is one of the most interesting and perhaps most promising of the new agents employed in physical medicine. Whereas short-wave diathermy currents have a frequency of 10 to 100 million cycles per second, microwave diathermy radiations have a frequency of 3 billion cycles per second.

A portable microwave diathermy apparatus has been developed which weighs less than 40 lb. The radiation is directed along a beam, much like infrared rays, but penetrates the way short-wave diathermy does and apparently is absorbed even better. The radiation produces definite increases in the temperature of the skin, subcutaneous tissues, and muscle, at least to a depth of 3 cm., and also produces a marked increase in flow of blood.

As with other potent therapeutic agents, microwave diathermy is not without danger if employed improperly. But when used correctly it is a valuable new therapeutic tool. We will hear much more about microwave diathermy in the next few years, and this great physical weapon of war will be of value in fighting disease and relieving suffering.

The powers of *atomic energy* are being converted quickly to beneficial and enormously promising medical purposes, especially in research. Medical applications are increasing speedily. Radioisotopes, produced in atomic piles or by the cyclotron, are already being employed extensively in medical research and in therapy.

Of importance in medicine is the use of radioisotopes as tracers to follow the action of certain drugs and chemicals in the living animal. The tagging of atoms through their radiations promises almost limitless advances in the fields of chemistry and physiology.

In addition, radioiodine is being employed for some patients who have hyperthyroidism, and radiophosphorus is being used to treat polycythemia vera.

*Sonar*, or ultrasonics, has also interested medical research workers. The term ultrasonics refers to vibrations which are above the audible frequencies for the human ear. For some time physicians have been ex-

perimenting with an ultrasonic device which produces high-frequency sound waves of 800,000 cycles per second. At present it is purely an experimental device, but later may have medical applications.

### REHABILITATION TODAY

In addition to utilizing the newer applications of physics to medicine, general practitioners should also seek opportunities to develop use of the closely related field of rehabilitation.

An editorial in a recent issue of the *Journal of the American Medical Association* stresses the new opportunities available to the medical practitioner for rehabilitation of his patients in this modern era.

> The family physician [in former days] after seeing a patient through the acute stages of an illness and subsequent convalescence, watched him until his ultimate return to work. The patient, usually stimulated by the daily needs of life on the farm and in the home, was chiefly interested in regaining his former place in his society. As he recuperated, he could make himself useful in many simple tasks. Gradually more difficult and strenuous skills would be regained. The relationship of the family physician to the home was sufficiently direct to permit him to help substantially in the process.
>
> Now, however, and especially in cities, the family physician can no longer help effectively in this rehabilitative phase of medical care. Many people live almost monastically in apartments like cubicles. From the hospital the inmate returns to his cell. . . . The activities of this cell are paradoxically not active, but passive; they consist of looking at papers, listening to radios and watching television. A patient returning to such an environment from a hospital is not stimulated. He has been looking at papers, listening to radios and watching television in the hospital, too. If he gains strength, he may go out to theaters and stadiums, where he will hear and see more of the same thing in the same passive way. Little incentive develops for regaining useful skills.

In these modern times there is opportunity for every physician to provide the incentives which are necessary if his patients are to be restored promptly to the fullest possible amount of normal activity. As Rusk has pointed out:

> The modern concept of this third phase of medicine, which takes the patient from the bed to the job, springs both directly and indirectly from the war. The rehabilitation programs of the military services and the Veterans Administration demonstrated that planned, integrated programs of convalescent care stressing activity as an adjunct to definitive treatment could reduce the period of hospitalization, offset the deconditioning phenomena of bed rest and prevent the harmful psychologic sequelae which often result from extended hospitalization.

Then Rusk stressed the many recent studies on the deleterious effects of prolonged rest in bed.

### ABUSE OF REST

One of the greatest opportunities in physical medicine and rehabilitation for the practitioner is to revise the old theories concerning rest and to avoid the abuse of rest as a therapeutic agent.

In the past, certain great medical leaders stressed, perhaps unduly, the importance of rest as a therapeutic measure. Three vigorous advocates of rest as a form of therapy stand out in the memory of present-day physicians. They are Weir Mitchell, Hugh Owen Thomas, and Allen K. Krause.

Mitchell's forceful espousal of the "rest cure" undoubtedly was the most influential factor in the apparent

overemphasis of the importance of rest therapy by neuropsychiatrists and general practitioners of medicine. Menninger has said: "Mitchell's prestige, influence and persuasiveness were such that his 'rest cure' for the treatment of neuroses influenced American medicine for nearly fifty years."

Yet thoughtful consideration in the light of present psychiatric knowledge would tend to minimize the value of simple physical rest as a therapeutic measure in the management of the neuroses. Mitchell's conception has continued to influence the thinking of nonpsychologically minded physicians who welcome a plausible physiologic explanation of baffling cases, make diagnoses of nervous exhaustion, nervous fatigue, fatigue neuroses, neurasthenia, and so on and prescribe rest cures, vacations, and relaxation treatment. But, as Menninger has pointed out, "Modern psychiatry regards this conception of neuroses and these forms of treatment for neuroses as entirely false in theory and unsound in practice."

Similarly, Thomas has probably unduly influenced orthopedists to overemphasize the therapeutic value of rest. This great orthopedist believed that an overdose of rest was impossible and never tired of repeating, "Rest must be enforced, uninterrupted and prolonged." Yet Ghormley has emphasized the fact that modern orthopedic surgeons, "realizing the detrimental effects of complete rest in bed," have succeeded in shortening the periods of such confinement with consequent improvement in results.

Finally Krause, the gifted writer on the care of the tuberculous, undoubtedly has influenced physicians to emphasize the rest treatment of tuberculosis with his oft-repeated admonition, "Rest must be first, and always first, in the treatment of the tuberculous." Yet, again, recent studies suggest that carefully graded activity may sometimes be beneficial in the management of certain patients who suffer from tuberculosis.

According to Dock, "Bone atrophy, muscular wasting and vasomotor instability are not infrequent sequelae of bed rest, while constipation, cathartic habituation, backache and many other chronic disabilities may appear during bed rest and persist for years or decades." He concluded, "The physician must always consider complete bed rest as a highly unphysiologic and definitely hazardous form of therapy to be ordered only for specific indications and discontinued as early as possible."

### VALUE OF ACTIVITY

Obviously there is a great opportunity for us as physicians to review our conceptions of the therapeutic value of rest.

No thinking person would deny the great therapeutic value of rest when employed with discrimination, but the almost universal practice among physicians of ordering prolonged rest without discrimination is to be condemned.

Is it not true that in many instances we keep our patients at rest in bed merely as a matter of convenience or custom?

Is it not perhaps true that we have clung too long to the habit of allowing our patients to remain com-

pletely inactive in bed, thus permitting them to become morbid and introspective and actually delaying their physical and mental recovery?

Should we not give more attention to the extreme importance of providing early graded physical and mental activity for our patients? I believe that we should.

### TRANSITION PERIOD

The great mistake made by physicians in the past has been that they have been prone to conclude that when a patient has passed the stage of acute illness the physician's responsibility ceases. The time is about gone when a surgeon can say to his patient, "Your stitches are out. You can go home now, and when you feel strong enough, go back to work," or when the internist can say, "Your temperature is now normal, you can get out of bed, and rest awhile and then return to your job."

Physicians and surgeons must give more attention to the scientific management of convalescence. They must remember that reconditioning of the sick or disabled person begins at the moment of disability and ends only when the patient is completely readjusted in a suitable normal activity.

The management of this period of transition from sickness to health is the physician's responsibility from beginning to end. There are great opportunities for every general practitioner to develop such programs in physical medicine and rehabilitation.

As Rusk has explained, "The practice of rehabilitation for any doctor begins with the belief in the basic philosophy that the doctor's responsibility does not end when the acute illness is ended or surgery is completed; it ends only when the patient is retrained to live and work with what is left."

There are many opportunities for the general practitioner to employ his knowledge of physical medicine and rehabilitation for the diversion of the powerful physical forces which threaten the destruction of civilization. He may turn these powers into constructive channels which lead to a better life for all mankind.

We physicians must assume leadership in the important task of developing physical medicine and rehabilitation for relief of human suffering. If all of us can strengthen our ethics to keep pace with our physics, if our education, tolerance, and understanding can keep up with our capacity to destroy, if we can advance our social engineering to keep abreast of our electrical engineering, we may yet make this precarious age of physics the greatest of all ages. The new developments in physical medicine and rehabilitation are contributing toward this end.

# Common Conditions Effectively Treated by Physical Medicine

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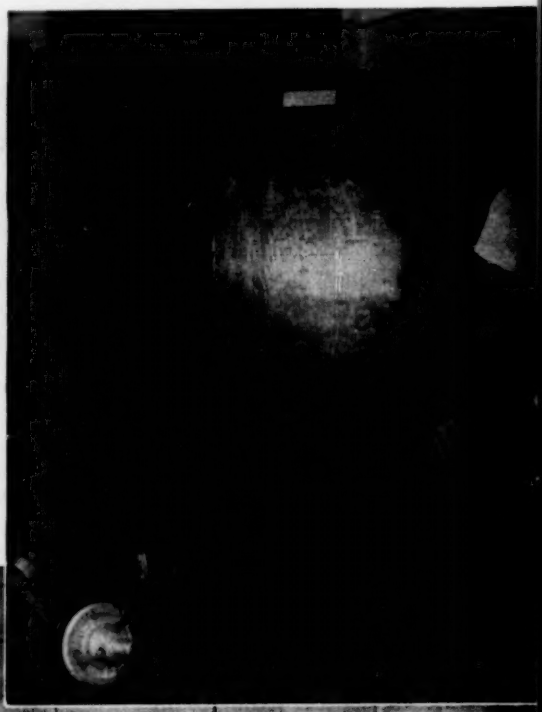
*Washington University, St. Louis*

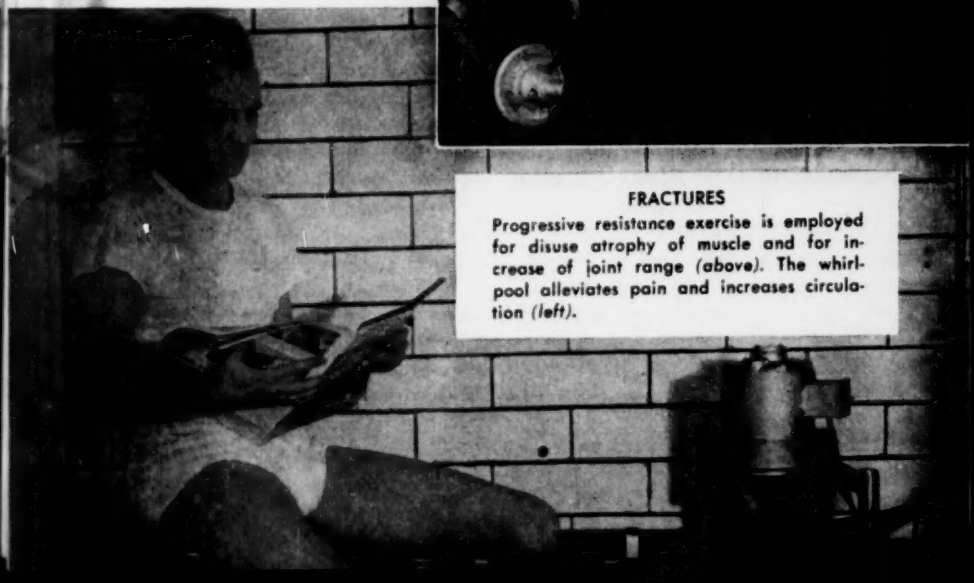
AMONG the conditions most commonly encountered in a physical medicine practice and which give the most gratifying results are those illustrated on this and the following pages.

Equipment is simple. For the average practitioner, Sedgwick Mead, M.D., suggests only the following:

1 or 2 treatment tables of wood and pads; 1,000-watt lamp, tungsten filament; 500-watt lamp, tungsten filament; 1 set assorted weights and boots and Sayre sling; should-

* Scientific Exhibit: physical medicine in general practice. Postgraduate Med. 7:54-57, 1950.





**FRACTURES**

Progressive resistance exercise is employed for disuse atrophy of muscle and for increase of joint range *(above)*. The whirlpool alleviates pain and increases circulation *(left)*.

er wheel; whirlpool tank, to be used interchangeably for upper and lower extremities; and paraffin bath with thermostatic control.

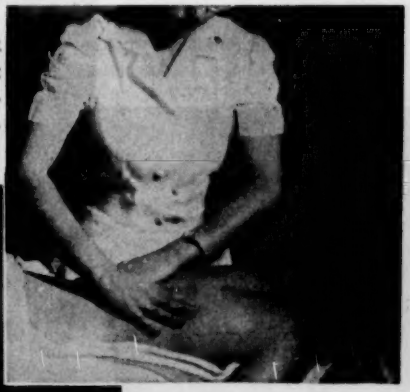
Even more important than the equipment are the services of a skilled assistant. Receptionists and other unqualified persons should not administer treatments.

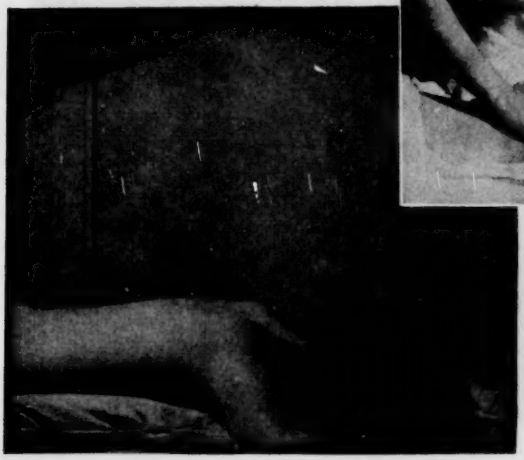
An ideal arrangement for a group medical practice is to pool resources for equipment and hire a physical therapy technician. She should be registered by the American Registry of Physical Therapy Technicians. Prescriptions should be detailed and intelligent. The technician should not be expected to make diagnoses or assume too much responsibility for the objectives of treatment. She is there to carry out the details accurately and safely. Joint range and muscle power should be recorded objectively; repetitious treatment is expensive to the patient and must always be avoided.

The patient should be told that physical treatment is rarely specific or curative, neither are most medications. Physical treatment is sympto-

**ARTHROPATHY OF CERVICAL SPINE**

**Sayre traction combined with massage and heat may produce a remission in degenerative arthropathy of the cervical spine. Sayre traction is simple to use and inexpensive.**





**LOW BACK PAIN**

**Many low back strains benefit from rest, heat, bed boards, and massage. Deep kneading breaks up abnormal contraction patterns and fatigue *(above)*. Luminous heat is obtained from a 500- or 1,000-watt tungsten bulb *(left)*.**

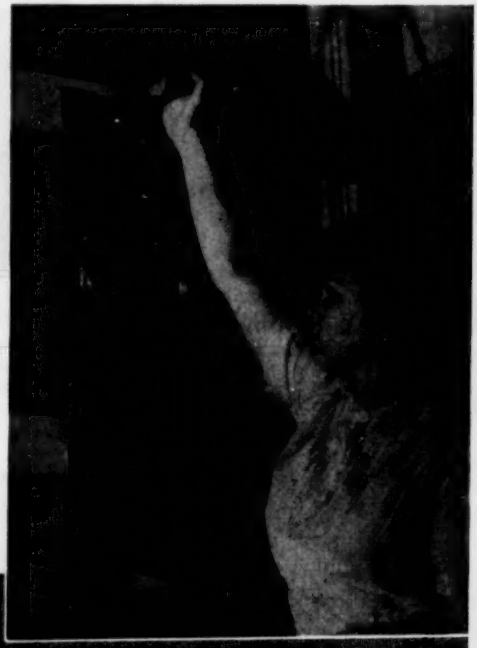
matic and adjuvant, complementing the rest of the patient's care.

The measure of success is the number of rheumatoid arthritics who do not drift away to other doctors.

Therapy is most effective if the patient is given an insight into the nature of his disease and is helped to preserve the maximum of function through the use of rest, salicylates, heat, simple exercises, and functional splint.

**FROZEN SHOULDER AND BURSITIS**

**Motion will never be restored to a frozen shoulder by pills or infrared lamps, although they help control pain. Only therapeutic exercise will be successful. Shoulder wheel *(right)*. Therapy by active assistance *(below)*.**



# Management of the Arthritic Patient

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The effective treatment of patients with arthritis and allied rheumatoid conditions presents one of the most difficult and important problems in medicine.

There is no single therapeutic approach to this group of patients. Each case requires complete study and careful evaluation in order to determine the remedial measures to be instituted. Successful management involves a carefully integrated program which takes advantage of every possibility in treatment.

It is the consensus of rheumatologists that, regardless of any other form of treatment employed in the regimen of the chronic arthritic, physical medicine plays an important role and must be regarded as an indispensable adjunct in the care of the majority or arthritics, particularly those who have reached the subacute and chronic stages of the disease.

A wide variety of physical measures have been advocated in the treatment of arthritis. These procedures have been variously classified, but a satisfactory grouping is shown in the table.

**PHYSICAL MEASURES FOR ARTHRITIS**

THERMAL, local or general. Thermal energy may be conveyed by:
- *Conduction*—compresses, electric pads and blankets, hot-water bottles, packs, heated objects such as bricks and sandbags, semisolids like mud and paraffin, chemically heated pads, hot baths, whirlpool baths, tanks, and pools
- *Convection*—luminous heat from lamps, bakers and cabinets, infrared lamps, electric heaters, and radiators
- *Conversion* of energy of a high-frequency electric current into heat, as occurs with long- and short-wave diathermy and microwaves
- *Radiation*—roentgen rays

COUNTERIRRITATIVE
- *Ion transfer*—the use of a galvanic current to introduce substances such as vasodilators and analgesics
- *High-frequency currents*—Oudin
- *Ultraviolet irradiation*—sunlight, mercury vapor lamps, and carbon arc lamps

MECHANICAL
- *Rest*
- *Exercise*—passive, assisted, active, resisted
- *Postural training*
- *Remedial exercises*
- *Massage*
- *Manipulation*
- *Electrical muscle stimulation*
- *Occupational therapy*
- *Rehabilitation procedures*

## THERMAL THERAPY

The local and systemic use of heat has long been regarded as one of the most effective forms of treatment

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in the various types of arthritis, especially for the relief of pain, stiffness, and muscle spasm. The type, duration, and frequency of the heat employed must be regulated according to the age and general condition of the patient; concomitant diseases, such as peripheral vascular or nervous diseases; the stage of the disease; the particular joints involved; the outstanding subjective symptoms; the individual reaction of the patient to heat since some patients benefit much more from one type of heat than from another; and, finally, the availability of different types of heating appliances.

In the successful management of arthritics it is important that the physical methods employed be carried out systematically, frequently, and over a considerable period of time. Therefore, it is often necessary to select some form of heat that a patient may employ regularly at home.

Baking and infrared lamps provide a convenient and efficient method of applying dry heat locally. Such treatments can be made available for home use, where, after proper instruction to the patient, they can be carried out for a half hour, two or three times a day.

Patients for whom moist heat is more desirable may be treated with hot packs to the affected joints. When the hands and feet are involved, a simple and efficient method of applying moist heat is immersion of an extremity in hot water—as hot as can be borne without discomfort—several times a day. This is a particularly useful procedure in chronic osteoarthritis. Although all methods of local heat application have enthusiastic advocates, several procedures have been so widely discussed that they deserve special consideration.

The paraffin bath, in which the part is repeatedly immersed in or painted over by melted paraffin until a protective coating is established, is an excellent method of obtaining prolonged effects of a high surface temperature. It has been shown that skin temperature under such a coating of paraffin may reach 116° F. The paraffin bath affords an even distribution of heat, leaves the skin soft and pliable, relieves pain and swelling, and is particularly useful in arthritis of the hands and feet.

In recent years, enthusiastic and at times exaggerated claims have been made for diathermy in the treatment of arthritis. There are those who insist that, in the treatment of larger joints and the spine, diathermy offers the most efficient method of heating the deeper structures. Krusen,[1] on the other hand, states that diathermy is rarely needed in the treatment of arthritis and that simpler methods of applying heat will usually be found more useful.

The effect of diathermy in arthritis is similar to that of any other form of heat, whether long- or short-wave diathermy is used. Whatever beneficial effects are observed are not due to any specific biologic or bacteriologic action. It has been our observation that diathermy has little to commend it in the management of arthritis. Indeed, when applied to acutely inflamed joints it brings about an increase in pain and disability.

In the management of the arthri-

tides, the systemic use of heat has frequently been employed. The immediate effect of the general application of heat is to raise body temperature. The extent and duration of the rise depend upon the amount of heat, the range of the surface exposed, and the length of time of application.

The systemic use of heat has a limited application. It is contraindicated in those who are underweight, debilitated, or old. It is of value for those who are reasonably vigorous and who have multiple joint involvement. Severe and prolonged forms of physically induced fever therapy are rarely indicated in treatment of the arthritic patient. Exceptions are to be found in severe cases of atrophic arthritis with multiple joint involvement that have resisted all other forms of treatment, and in refractory infectious arthritis due to the gonococcus and other pyogenic organisms.

The usual methods employed for the general application of heat in arthritis consist of various kinds of hot baths, hot packs, and some type of electrically or steam heated cabinets. If the latter are to be used they should be constructed so that the patient can be recumbent while being subjected to heat.

By the use of these methods temperatures up to 101 to 102° F. can readily be induced for an hour to several hours with much benefit and with minimum risk to an arthritic patient. Patients being subjected to even the milder forms of artificially induced fever should be kept under constant observation. Prolonged and excessive sweating should be avoided. The effectiveness of this type of treatment in arthritis is greatly increased if the period of fever therapy is followed by carefully regulated contrast baths and an adequate period of rest.

### HYDROTHERAPY

Closely allied to the use of heat in the treatment of arthritis are certain forms of hydrotherapy. Since water is an excellent conductor of heat, it serves as an effective medium in the application of thermal stimuli. Furthermore, immersion in water has the added advantage of overcoming to a considerable extent the force of gravity.

Since the combined effects of water and heat tend to relieve muscle spasm, facilitate joint movement, and stimulate cutaneous circulation, this combination has definite therapeutic value in the management of arthritis. Hot compresses, general hot baths, various forms of wet packs, contrast baths, douches, and whirlpool baths are recognized forms of hydrotherapy, the value of which depends upon the combined physical properties of water and mechanical and thermal stimuli.

Of these forms of treatment, the whirlpool bath is one of the most effective in the management of arthritis involving the extremities. The temperature of whirlpool baths is usually maintained between 100 and 110° F. Since the water is kept constantly aerated and in motion by agitation, the effect of a gentle and continuous massage is added to that of heat.

One of the most satisfactory ways in which the arthritic can be given the advantages of hydrotherapy, heat,

and gentle massage is by immersion of the entire body in pools or tanks so constructed that complete range of motion of all joints is possible. The advantage of such tank treatment is based upon the fact that when a body is immersed, according to the law of Archimedes, it will lose as much weight as the weight of the water displaced. Thus the sustaining power of the water almost completely carries the weight of the body.

As a result, it is possible for weakened muscles and diseased joints with little or no discomfort to perform motions under water that would be virtually impossible to accomplish out of water, where the force of gravity must be overcome. As a result of underwater exercise and massage in a hot bath, pain is relieved, muscles that are in spasm relax, weakened muscles gain in strength, and a definite increase in the range of joint motion is attained.

Another form of hydrotherapy that for many years has enjoyed considerable popularity is the contrast bath. This is particularly useful in osteoarthritis involving the extremities. In such baths the affected part is immersed first in hot and then in cold water. According to Krusen's[3] observations, the best results are obtained with 5 minutes of heat and 2 minutes of cold, or with 4 minutes of heat and 1 minute of cold, always starting and ending the immersion in hot water.

### MASSAGE

One of the oldest therapeutic agents in the history of medicine and one of the most widely used procedures in physical therapy is massage. This has a definite place in the management of arthritis. Pemberton[3] regards it as the most valuable procedure in the treatment of the arthritic. He believes that properly applied massage does good in chronic arthritis in four ways:

► Massage helps to prevent or delay atrophy in muscles and aids in the restoration of muscle tissues when atrophy has already occurred.

► Massage improves the general and local metabolism.

► Massage increases the amount of circulation of blood to certain tissues and facilitates the return to the circulation of many corpuscular elements tucked away in inactive regions.

► Massage lessens local edema by mechanically bringing about the effects normally exercised by muscles in aiding the heart to empty the venous circulation.

The value of massage depends largely upon its prolonged, systematic, and proper use. It should not be employed in the acute stages of joint disease, when it may bring about more harm than good. Its greatest value is apparent in chronic forms of arthritis. As is the case in all other forms of physical therapy employed in the treatment of arthritis, massage is most effective when it is used as a part of a well-integrated therapeutic regimen and not as an isolated and occasional form of treatment.

There is general agreement that massage is not capable of increasing muscular strength, which can only be accomplished by active exercise. In the treatment of the chronic arthritic, massage should be supplement-

ed or replaced as soon as possible by passive and later active exercises. Massage can never take the place of exercise.

### EXERCISE

The importance of exercise in maintaining mobility of the joints in chronic arthritis has long been recognized. Over sixty years ago Spender[3] pointed out the danger of immobilizing affected joints and advised properly controlled exercises as a means of preventing atrophy and stiffness.

The results obtained at the Army Rheumatic Disease Centers during the past war furnish impressive evidence that patients suffering with chronic rheumatoid arthritis have as many remissions and improve more rapidly when treated by a supervised program of exercise than when given the older regimen of complete bed rest. This experience with arthritis lends added weight to the lessons pointed out by Dock, Krusen, Ghormley,[4] and others in the often quoted discussion on the abuse of bed rest.

A large part of the disability which occurs in patients with rheumatoid arthritis is the result of muscular atrophy, contractures, and ankylosis of joints. Development of these conditions is largely preventable if, early in the course of the disease, a suitable exercise program is instituted and proper bed posture is adopted by the patient.

As Hollander has pointed out, determination and maintenance of the optimum balance between rest and exercise for each patient is one of the most important considerations in the successful treatment of rheumatoid arthritis. The same principle with suitable modifications is equally applicable in most forms of chronic joint disease.

During the acute stage of rheumatoid arthritis or any joint disease, a period of bed rest is essential, but this period should be as brief as possible. Even if the patient is confined to bed, the value of exercise should not be overlooked.

In addition to the use of heat and massage, patients should be taught muscle-setting exercises. These should be performed several times a day. Bed exercises of the uninvolved portions of the body should be carried out regularly every day to prevent general atrophy and the other ill effects of prolonged inactivity. It is at this stage that rehabilitation, in its broad sense, actually begins.

The involved joints, even though acutely inflamed, should be gently carried through the maximum range of motion several times a day. The motions should never be vigorous or forced or carried to the point of producing severe pain. They should be gentle, slow movements, passive or assisted.

If a Hubbard or similar tank is available, underwater exercises are of great value to the bedridden patient. The arthritic should be taught to maintain proper posture while in bed, and the pernicious practice of using pillows under the knees or shoulders must be scrupulously avoided.

As soon as condition of the joints permits, the patient should be taught suitable corrective exercises and encouraged to carry out active exercises himself several times a day.

The value of any form of exercise

in chronic arthritis is tremendously increased by regular and frequent repetition. It has been well said that few if any joints are permanently made worse by too early, guided, and careful mobilization, whereas all too many have been permanently deformed because of undue delay in instituting exercise.

As soon as the arthritic is ambulatory, the optimum balance between exercise and rest should be determined for the individual patient. Such a balance is not fixed but changes from time to time as the condition of the patient varies. The optimum exercise-rest balance has been defined as the ratio between the maximum amount of active exercise an arthritic patient can perform without producing excessive fatigue or a residual increase in pain and muscle spasm, and the minimum period of rest needed before such activity can again be resumed.

For example, a patient may be able to exercise only five minutes and then require an hour's rest before such exercise can be resumed with comfort. Such a balance is designated as 5:60 or 1:12. Day-to-day increase in the exercise-rest ratio can be used as a quantitative index of improvement.

Later, resistive exercises may be instituted with profit. The resistance may be manual, by the use of weights or De Lorme's high resistive–low repetitive exercises, which develop muscle strength and bulk.

To be effective:

► Exercise must be carried out with precision and purpose. Purposeless exercise accomplishes little.

► The patient must be convinced of the need of exercise and cooperation.

► The range of motion must be checked frequently by goniometer.

► The muscle bulk must be measured by a tape measure.

► Exercises should be prescribed in detail and specifically.

### OTHER THERAPY

Additional physical therapy procedures that at times have been used to advantage in the management of the chronic arthritic are the introduction of various vasodilators and analgesic drugs by ion transfer into the area of the involved joints. Those most often used for this purpose are mecholyl chloride, histamine, procaine, potassium iodide, and salicylates. Ion-transfer therapy has its advocates, but there is considerable divergence of opinion as to its value.

Heliotherapy, exposure to natural or artificial sunlight, has been recommended in the treatment of arthritis. In spite of exaggerated claims there is no convincing evidence that ultraviolet irradiation has any specific effect upon joint conditions.

Within certain ranges of wave length, ultraviolet irradiation induces chemical changes in the living animal that activate vitamin D, which in turn influences the metabolism of phosphorus and calcium. Thus it has a favorable influence on rickets, tetany, and other conditions that are dependent upon a calcium deficiency. Its use for arthritics is limited to improving the blood count and the general nutrition of those individuals who are deprived of an adequate amount of sunlight.

### OCCUPATIONAL THERAPY

In the successful treatment and rehabilitation of severe forms of arthritis, physical therapy should be supplemented by its close ally, occupational therapy.

Occupational therapy is a form of treatment to be prescribed by a physician in an effort to hasten recovery. It involves purposeful activity designed to aid the patient perform exercises that will strengthen muscles, restore joint function, and at the same time achieve some useful and interesting purpose. Such activity is usually more desirable than activities that result in no obvious accomplishment.

Diversional occupational therapy has a definite place and often aids in building up the patient's morale and in stimulating his self-confidence. What is known as functional occupational therapy, designed especially to restore normal range of motion to special joints, is of the greatest importance in managing the arthritic. The psychology of progressive exercise by means of an interesting occupation is of utmost value and should not be neglected. Occupational therapy is an essential step in vocational rehabilitation, the ultimate objective of treatment.

### REHABILITATION

The definitive treatment of arthritics involves a program of rehabilitation. The goal of rehabilitation is to bring about restoration of the maximum function and adjustment of the individual and to prepare him physically, mentally, socially, and vocationally for the fullest possible life compatible with his abilities and disabilities.

It is the obligation of the physician to see that his patient achieves this final phase of therapy which has been termed by Rusk the "third phase of medical care."

Rehabilitation is a major step in the return of the chronic arthritic to a useful self-reliant existence. As for all the physically handicapped, the patient's basic needs are: [1] to walk and travel, [2] to care for the daily requirements of living, [3] to acquire and maintain maximal use of the hands.

Until these objectives have been attained the treatment of the arthritic is not completed.

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# How to Organize a Physical Medicine Department in a General Hospital

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*Prepared for Modern Medicine*

Of the 5,939 hospitals listed in the 1947 *Directory of the American Hospital Association*, less than half reported Physical Medicine departments and few of these can claim rehabilitation services capable of meeting all the demands of the chronically ill or disabled patient.

The department of Physical Medicine and Rehabilitation is a service department similar to the x-ray and clinical laboratories in the hospital and should be prepared to assist the physicians in planning management of patients with chronic diseases or disabilities. Expensive equipment does not insure good results. The service that the department renders the patients is in direct proportion to the qualifications of the staff.

## CHOICE OF DIRECTOR

The director must be prepared to evaluate all cases referred to the department, determine the feasibility for rehabilitation, outline therapy, and define the objectives desired for the individual case. The hospital staff should be indoctrinated by him in the philosophy, duties, and policies of the department, to assure mutual understanding and cooperation.

The organization of the Department of Physical Medicine and Rehabilitation should start with the selection of a qualified physician as chief, preferably a Diplomate of the Board of Physical Medicine and Rehabilitation.

## PERSONNEL

The articulateness of the staff and their value to the patient is a reflection of their training and background. The selection and employment of staff members should rest with the department's director and consideration be given, among other things, to their ability to work as members of the rehabilitation team.

The personnel of the department may be considered in the following two major categories:

The first group would consist of the therapists—physical, occupational, speech, and corrective. The second group would consist of the ancillary personnel who deal primarily with the psychosocial aspects relating to the patient's needs. This group would include the social worker, the psychologist, recreational director, edu-

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cator, vocational counselor, and director of volunteers.

In addition to these two groups, the department should have access to competent and reliable bracemakers, limbmakers, shoemakers, and cosmetic appliance manufacturers. Attendants should be available to perform such duties as moving patients and equipment and storing supplies. The therapists will thus be free from these tasks and be able to devote full time to their professional duties.

For obvious reasons, a department secretary is necessary and, in many instances, a second secretary may be required because the medical care of many patients is now covered by various insurance and prepayment plans.

All therapists and assistants should be registered in their respective associations or have degrees in their respective fields. All the personnel, with the exception of the appliance manufacturers, should be hospital employees and privileged to submit reports and findings which become part of the patient's record.

It is estimated that one physical therapist is capable of treating 15 to 20 patients daily except under an acute load of poliomyelitis cases. An occupational therapist can treat twice this number because the work can be done in groups or classes. The size of the remainder of the staff naturally depends on the nature and number of the patients handled.

### LOCATION OF DEPARTMENT

The department should be easily accessible to both in and out patients. Ramps should be available for easy entrance to the hospital. When feasible, a parking area near the hospital entrance should be restricted to the use of rehabilitation patients.

The general environment of the department should be one of good ventilation, pleasant appearance, and cheerfulness. The possibility of future expansion must be considered when selecting a location. One large hospital had an 87% increase in the physical medicine and rehabilitation case load within six months of the organization of the department.

### ROOM PLANNING

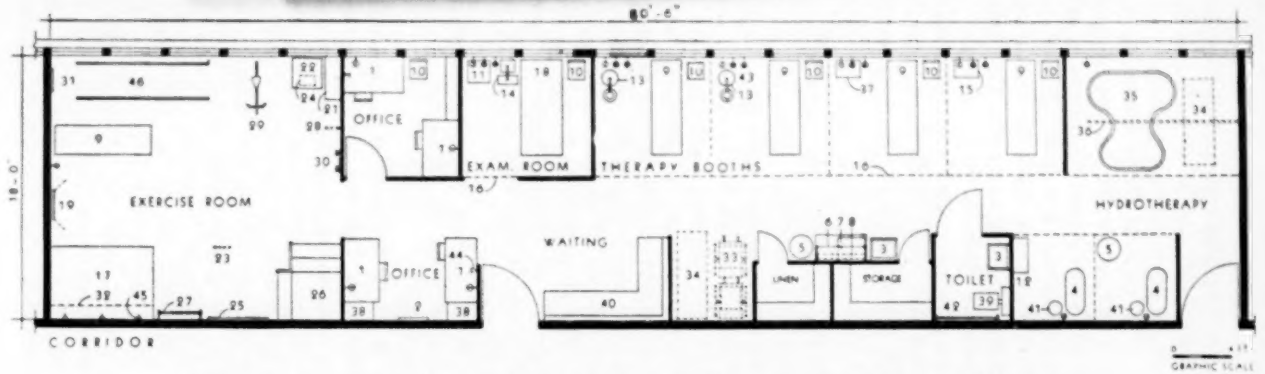
The American Hospital Association considers that 536.25 sq. ft. is the desirable floor space for a 50-bed general hospital; 891 sq. ft. for a 100-bed hospital; and 1,449 sq. ft. for a 200-bed hospital. All doors and corridors should be wide enough to accommodate wheel chairs and stretchers—a minimum of 40 in.

The accompanying floor plans and legends are self-explanatory. Every department has basic minimum requirements.

► A *waiting room* of sufficient size to meet the needs should be provided.

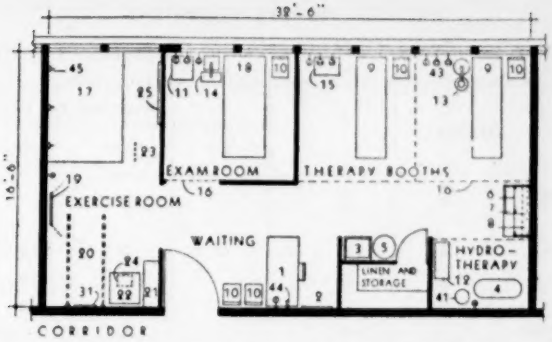
► Also necessary is an *examination room*. This will not only be used as a complete physical examination and consultation room, but will also serve during the physician's absence as an interviewing and testing room for the psychologist, social worker, or vocational counselor.

► *Office space* for the clerical and administrative needs of the department must be provided. When departments are large, additional office space will be needed for the therapists and supervisors because




## PHYSICAL THERAPY SUITE FOR A 200-BED GENERAL HOSPITAL

1. Desk
2. Bulletin board
3. Lavatory with gooseneck spout
4. Whirlpool bath
5. Laundry hamper
6. Wall cabinet
7. Sink with drainboard
8. Glass shelf over sink
9. Treatment table with storage space below
10. Chair
11. Bedside table
12. Paraffin bath
13. Infrared lamp
14. Ultraviolet lamp
15. Short-wave diathermy unit
16. Rod and curtains
17. Gym mat
18. Examination table with storage space below
19. Posture mirror (triple, portable)
21. Three shelves, 6 in., 2 ft. 3 in., and 4 ft. above floor
22. Table, 24 by 24 in.
23. Sayre head sling, attached to ceiling
24. Foot rest
25. Shoulder wheel
26. Steps
27. Stall bars
28. Shoulder abduction ladder, arc type
29. Stationary bicycle
30. Pulley weights
31. Wall mirror
32. Shelf, 6 ft. above floor
33. Wheel chair
34. Wheel stretcher
35. Hubbard tank. A therapeutic pool 8 by 12 ft. may replace the Hubbard tank by increasing length of suite.
36. Monorail over
37. Direct current generator
38. File cabinet
39. Water closet
40. Bench
41. Adjustable stool
42. Hand rail
43. Three single outlets on separate branch circuits. 1 outlet 2-pole, 2 outlets 3-pole.
44. Telephone outlet
45. Gym mat hooks
46. Parallel bars



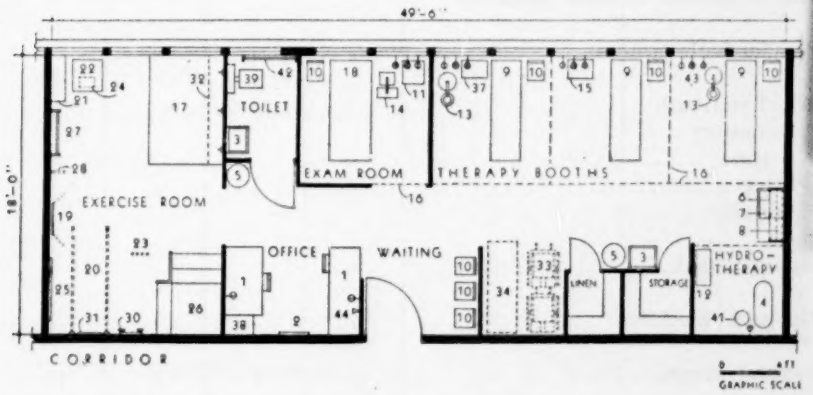

PHYSICAL THERAPY SUITE FOR A 50-BED GENERAL HOSPITAL

therapists spend about one hour daily keeping records. This office can be used by other members of the department when the therapists are otherwise occupied.

► The *exercise room* or *gymnasium* should be of sufficient size to accommodate an 8- to 12-ft. parallel bar, a flight of steps, gymnasium mats, and space for gait training.

The floor covering should be smooth, skidproof, and dry. When patients are learning to use crutches, a highly polished floor surface is hazardous. Rubber or battleship linoleum provides a satisfactory floor covering for this area.

Therapy booths should be large enough to have room for a wheel chair, stretcher, or large pieces of equipment and still have sufficient space for easy access to the treatment table. A curtained cubicle affords greater flexibility than a partitioned booth in the use of floor space. When not being used for therapy, this area




PHYSICAL THERAPY SUITE FOR A 100-BED GENERAL HOSPITAL

PHYSICAL THERAPY EQUIPMENT

*Suggestions for General Hospitals with Outpatient Departments*

| Article | Number of Beds | | | |
|---|---|---|---|---|
| | 50 | 100 | 200 | 500 |
| Infrared lamps | | | | |
| Luminous | | | | |
| large | 1 | 2 | 2 | 3 |
| medium | | 1 | 2 | 4 |
| small | 1 | 1 | 2 | 5 |
| Nonluminous | | | | |
| medium | 1 | 1 | 1 | 2 |
| Bakers | 2 | 3 | 4 | 6 |
| Short-wave diathermy apparatus | 1 | 1 | 2 | 4 |
| Ultraviolet lamps | | | | |
| General | 1 | 1 | 1 | 1 |
| portable | | | 1 | 1 |
| Local | | 1 | 1 | 1 |
| Direct-current generators | 1 | 1 | 1 | 2 |
| Generators of electrical current for producing graduated muscular contractions | 1 | 1 | 1 | 2 |
| Passive vascular exercise apparatus | | 1 | 1 | 1 |
| Paraffin bath (arm) | 1 | 1 | 1 | 1 |
| Whirlpool bath | | | | |
| Stationary | | | | |
| arm | | | | 2 |
| leg | 1 | 1 | 2 | 2 |
| Portable | | | 1 | 1 |
| Hubbard tank | | | 1 | 1 |
| Hot-pack machines | 1 | 1 | 1 | 2 |
| Interval timers | 3 | 5 | 6 | 10 |

PHYSICAL THERAPY GYMNASIUM EQUIPMENT

*Suggestions for General Hospitals with Outpatient Departments*

| Article | Number of Beds | | | |
|---|---|---|---|---|
| | 50 | 100 | 200 | 500 |
| Goniometers (set) | 1 | 1 | 1 | 2 |
| Treatment tables | 2 | 3 | 5 | 13 |
| pillows | 6 | 8 | 12 | 28 |
| mattresses | 2 | 3 | 5 | 13 |
| rubber sheets | 2 | 3 | 5 | 13 |
| Examination tables | 1 | 1 | 1 | 2 |
| *Steps | | 1 | 1 | 1 |
| *Walking bars | 1 | 1 | 1 | 1 |
| *Shoulder Wheel | | | 1 | 1 |
| Pulley weights | | 1 | 1 | 2 |
| *Shoulder abduction ladder (arc type) | | 1 | 1 | 1 |
| *Wrist roll | | | | 1 |
| *Supinator-pronator | | | 1 | 1 |
| Progressive resistance apparatus | 1 | 1 | 1 | 1 |
| Rowing machine | | | | 1 |
| Stationary bicycle | | | 1 | 1 |
| Stall bars | | 1 | 1 | 1 |
| Sayre head sling | 1 | 1 | 1 | 1 |
| Gymnasium mats | 1 | 1 | 2 | 3 |
| Posture mirror (triple, portable) | 1 | 1 | 1 | 1 |
| Wall mirror | 1 | 1 | 1 | 1 |
| *Curb | | | | 1 |
| *Ramp | | | | 1 |
| *Wands | 3 | 5 | 7 | 9 |
| Sand bags (assorted sizes) | 6 | 10 | 15 | 20 |
| Crutches (adjustable—pairs) | 1 | 2 | 3 | 4 |

* Indicates equipment which is easily constructed and may be improvised in the hospital.

can be converted into a recreation or conference room.

► The *hydrotherapy room* should have privacy for the sake of the patient and also to keep the noise of the water agitators and water from distracting the department. A Hubbard tank or pool requires special installation arrangements, of which a hospital architect undoubtedly will be aware.

A sufficient supply of hot water as well as an adequate water pressure should be assured. The plumbing plans must conform to the local building codes.

The flooring for this area should be considered from the standpoint of waterproof and also of skid-proof features.

► The size of the *occupational therapy shop* will vary with the demands and available space. In many hospitals, occupational therapy shops are not located in the physical medicine department because of the distracting noises. Therefore, such a shop is not illustrated in the plans given in the illustrations.

The general considerations regulating the location of the physical medicine department should be applied to the occupational therapy department.

► If possible, a *soundproof room* should be provided for speech therapy. A sound recorder is of inestimable value in judging the effectiveness of a speech program.

This room can be made doubly useful if a constant temperature control system is installed. Thus investigative and diagnostic studies relating to circulatory disorders may be carried out in the same room.

### WIRING

The wiring requirements must be carefully planned to insure safety.

The outlets should be single, 3-pole, locking-type of receptacles located 3 to 4 ft. from the floor. This arrangement insures grounding of equipment and therefore meets a *must* precaution for safety purposes.

### EQUIPMENT

All physical therapy apparatus purchased should be council accepted by the Council on Physical Medicine and Rehabilitation of the American Medical Association.

A breakdown of the physical medicine equipment and the gymnasium equipment that the American Hospital Association considers minimal for the different sized hospitals is given in the accompanying tables.

### RECORDS AND RATES

The records of the department should conform to those considered basic for all rehabilitation departments. These include a Muscle Test sheet, a Range of Motion Test sheet, and an Activities of Daily Living sheet.

These records should all become part of the patient's chart, and duplicates should be kept in the department, with cross references listing patients' names or disabilities or diagnoses as desired.

A record should also be made of all therapy prescriptions as well as of all treatments.

*The floor plans and tables are from* Essentials of a Hospital Department of Physical Therapy. *American Hospital Association. Chicago, 1949.*

# Hydrotherapy in General Practice

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*Prepared for Modern Medicine*

With the sensational advances in antibiotics, immunology, and chemotherapy taking the spotlight, we should not fail to realize that hydrotherapy has kept pace with an increased utility and effectiveness.

Hydrotherapy may often be used as a valuable supplement to the general medical regime and can simply, safely, and effectively bolster a therapeutic program. It is also important to appreciate that, with the recent miraculous control of acute infections, rehabilitation is now accepted not only as a major family problem but also as a national economic one.

It is hoped that the following presentation may stimulate a wider appreciation and utilization of the many virtues of hydrotherapy as it is applied in the patient's home, the physician's office, and the modern hospital or rehabilitation center.

## PHYSIOLOGIC EFFECTS

The chief physiologic effect of the immersion bath is produced by temperature changes.

A brief application of cold water causes constriction of peripheral blood vessels with pallor and chilliness. The sweat glands are inhibited. Heat elimination is decreased and internal temperature rises slightly. The pulse and respiratory rates are increased.

The reaction, which begins immediately and is usually complete within twenty minutes, consists of dilatation of the peripheral blood vessels and redness and warmth of the skin. Relaxation takes place, with slowing of the pulse and respiratory rates and a fall of the patient's internal temperature.

Healthy individuals react more promptly to cold applications than do asthenic persons or very young children.

Just as cold applications cause reactions, heat produces various effects, depending on the intensity and mode of application. Moderate heat relaxes the surface vessels. At a higher temperature the stimulation produces a reflex vasoconstriction with a pallor which soon gives place to dusky redness. After a hot bath the rate of perspiration may be increased 50 times the normal amount.

Fever caused by hydrotherapy is less exhausting than that caused by disease. The pulse and respiration rates increase in proportion to the temperature. The systolic pressure rises slightly during the fever, and

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the diastolic pressure has a tendency to fall.

The velocity of the blood flow is accelerated. The blood volume is decreased, the red blood corpuscles and hemoglobin are augmented. The bone marrow and hemopoietic system are stimulated.

The white blood count increases in proportion to the temperature. For instance, a bath which raises a healthy individual's temperature to 101° F. followed by a one-hour sweat pack will produce an increase in leukocytes of about 3,000; the leukocyte rise will be greater in a patient with a low-grade infection. This increase subsides in normal persons within several hours.

Blood sugar, nonprotein nitrogen, urea, and uric acid increase at the height of the temperature but often drop below original levels when the individual's equilibrium has been reestablished. The urine becomes more concentrated and is usually acid, with increased urates and phosphates.

The ability of heat to relieve pain and relax spasm is no doubt effected by production of collateral hyperemia and relief of vascular stasis.

There is every reason to assume that a very definite relationship exists between the reactions brought about by hydrotherapeutic measures and those induced by what is known as nonspecific protein therapy.

The autonomic status of the buccal and respiratory mucous membranes corresponds to that of the skin. Under physiologic conditions, particularly during body rest, the abdominal and pelvic organs are more abundantly supplied with blood than the extraperitoneal structures. During muscular exercise or increased external temperature, the autonomic status is reversed and the splanchnoperipheral blood volume ratio is shifted in favor of the peripheral structures.

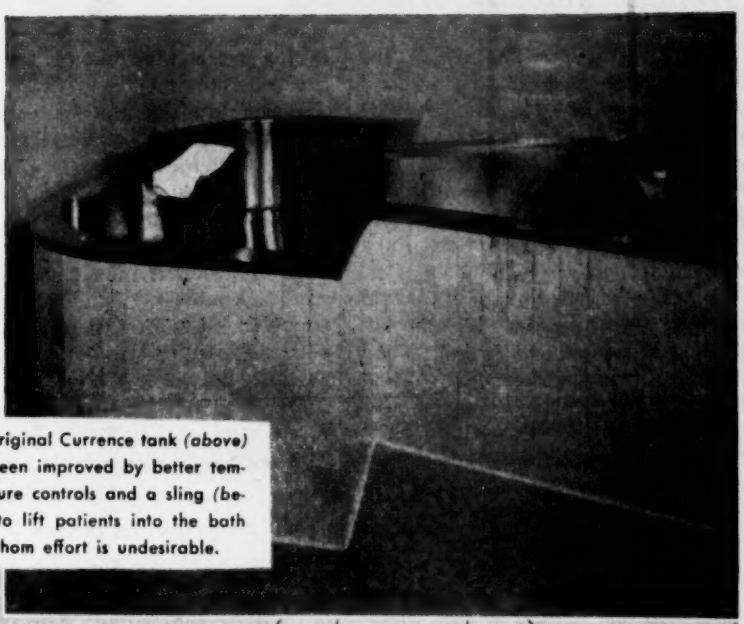
Because of the buoyancy of water and its countereffect against gravity, weak, atrophied, or partially paralyzed muscles can exercise under water with far greater efficiency than in the air. An individual is capable of a great deal of underwater exercise with a minimal expenditure of energy and little cardiac effort.

The local application of heat continues to be one of the most available and frequently utilized procedures in physical medicine.

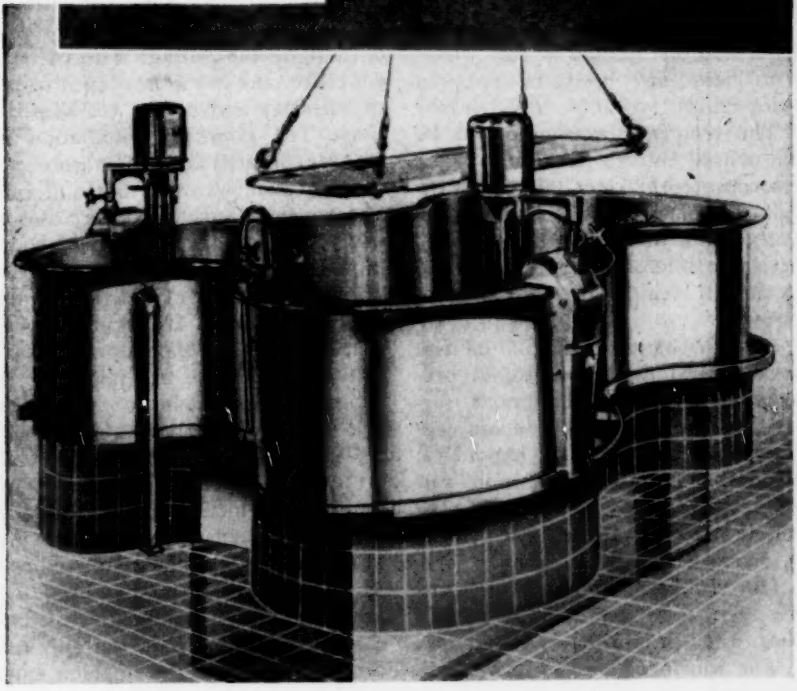
### HOME OR OFFICE USE

Comfortably warm, full immersion baths may be taken by the patient at home. This type of hydrotherapy is valuable in many different conditions.

Such baths have proved beneficial for persons with aching muscles, cramps from muscular fatigue, peripheral neuritis, osteoarthritis, chronic gout, myositis, fibrositis, hypertrophic spondylitis, spastic constipation, spastic colitis, and pylorospasm. Warm immersion baths are also of value for improving all the avenues of elimination in various types of poisoning, as palliative measures in colic resulting from cholelithiasis or renal calculi, for therapy in neurasthenia, in general or cerebral arteriosclerosis, and in convulsions in children, as a provocative technic in locating a focus of infection, and for treatment of low-grade infections—but should be used with the same caution as foreign protein therapy.



**The original Currence tank *(above)* has been improved by better temperature controls and a sling *(below)* to lift patients into the bath for whom effort is undesirable.**



Cipollaro has written about the usefulness of medicated baths and wet dressings in extensive pyogenic eruptions and for the treatment of generalized pruritus and scaly dermatitis. He has also mentioned that patients with pemphigus are more comfortable when immersed in a medicated bath.

A warm bath followed by a cold bath is worth while as a tonic adjunct for patients with low blood pressure, amenorrhea, anemia, and chlorosis.

Contrast baths consisting of alternate immersion of the patient's extremities in warm or hot, then in cool or cold water are useful for impaired peripheral circulation. The usual procedure is to alternate 10 times, with three minutes in warm water and one minute in cool water. This bath may be taken once or twice daily.

The temperatures should not be hot or cold enough to produce reflex vasoconstriction, since this would defeat the purpose. When the condition is not too far advanced, the patient's tolerance to greater extremes of temperature rapidly increases.

Cold sitz baths are worthy of trial as a general tonic measure to promote the appetite and stimulate metabolism and in cases of atonic constipation, biliary atony, or impotence. Headaches due to hypertension, vascular spasm, nervous tension, or alcoholic excess may be benefited by cold sitz or foot baths.

Hot sitz baths are useful for urinary tenesmus, spasmodic dysmenorrhea, and chronic pelvic congestion.

The whirlpool bath is undoubtedly the method of choice for office hydrotherapy.

Warm arm or foot baths are of value in Heberden's nodes, Raynaud's disease, scleroderma, arteriosclerosis of the feet, thromboangiitis obliterans, peripheral nerve injuries, indolent ulcers, adherent scars, osteomyelitis of terminal phalanges, sprains, strains, contusions, painful stumps, recent fractures after removal of casts, and in many forms of peripheral vascular disease.

In most of these conditions interim hand or foot baths, judiciously advised, are also desirable for home use.

### HOSPITAL OR CENTER

In 1935, *Modern Medicine* described the original model of the tank devised by the author. The present Currence tank has a broadened scope of efficiency and utility (see illustration). The improved installation is capable of gradual temperature induction from warm to hot and can likewise provide a rapid decrease of water temperature to tepid or cool. This feature is desirable when underwater reeducation of muscles or underwater exercises are indicated. Patients for whom expenditure of effort is undesirable are placed in a sling or on a stretcher and lifted in and out of the tank by a crane.

Various baths benefit almost all arthritic and rheumatic diseases by improving function or at least by preventing further deformities. One of the most spectacular results achieved with hydrotherapy has been the rehabilitation of the senile osteoarthritic who, in the past, was only too often relegated to the hopeless cate-

gory. Relief of pain, improved function of joints, lessened crepitation, improved skin texture, and, almost invariably, a noticeable improvement in memory are effects to be anticipated.

In Marie-Strümpell disease, unless a complete ankylosis of the spine has developed, postural benefit is often remarkable. Hydrotherapy is very important in conjunction with a medical regime for prevention of deformities in rheumatoid arthritis and chronic gout.

Rapid restoration of function is usually accomplished in chronic bursitis of the shoulders. This is true even in conditions so severe that several manipulations under anesthesia are required.

Low-grade hyperpyrexia with hydrotherapy often produces remissions in multiple sclerosis, intractable asthma, chronic brucellosis, corneal ulcers, Sydenham's chorea, and lumbago.

Hydrotherapy is a worthwhile adjunct for patients with primary, secondary, congenital, cerebrospinal, or cardiovascular syphilis, for the paretic or tabetic person, and in cases of interstitial keratitis.

The period of debility after most chronic illnesses can often be materially reduced by early underwater exercises. This form of treatment should be considered in rehabilitation with cardiac disease, in postoperative conditions or prolonged incapacitation from accidents, or after lengthy confinements in casts.

When elderly people with pinned fractures of the neck of the femur were given daily underwater exercises reclining in the Currence tank not only were muscle atrophy and the period of recuperation reduced, but the production of callus and bone formation seemed to be hastened. Treatments were started within seven to nine days after surgery, or as soon as the operative wound was well healed.

Although in many cases of long-standing hemiplegia we are able to show gradual improvement, it is illuminating to see what happens when a patient, even with severe hypertension, starts treatment seven days after his arm and leg have become completely paralyzed from a cerebral accident. After twelve to twenty treatments he may be able to write and walk well. Without hydrotherapy many of these patients would have been permanent invalids or at least have had claw hands.

Beneficial effects are also found in treating paraplegic patients by hydrotherapy.

The value of massage and exercise, which in most cases is combined with hydrotherapeutic procedures, must be stressed.

# Rehabilitation of the Neurologic Patient

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*Prepared for Modern Medicine*

PERHAPS the most neglected patients in America from a therapeutic angle are those with neurologic disabilities. Yet in no field of medicine is the outlook for patients more optimistic.

If the physician can devote a little time and effort to instructing the patient's relatives and to mobilizing the local resources available for retraining and rehabilitation, enough improvement can be achieved to justify the effort in about 75% of cases. Often the retraining program can be carried out at home by members of the patient's family and with simple, improvised equipment.

Best results relative to the severity of the disability are achieved by patients with hemiplegia, followed, in order, by those with ataxia, parkinsonism, flaccid paralysis, and paraplegia.

## THE PROBLEM

Too often, after the acute stage of illness is over in neurologic conditions, including cerebral vascular accidents, multiple sclerosis, parkinsonism, and spastic paraplegia caused by injury, further therapy is abandoned and the patient is allowed to become a complete invalid or dependent. Ultimately he is confined to bed, usually in an institution or rest home, where constant supervision is needed for his care.

Patients with neurologic disabilities occupy a tremendous number of hospital and rest-home beds throughout the country, and the problem threatens to become of increasing importance. The percentage of persons in the population over the age of forty-five rose from 17.8% in 1900 to 26.5% in 1940. It is estimated that this age group will comprise 40.3% of the population in 1980. The number of patients with neurologic disabilities, therefore, can be expected to increase rather than decrease.

For years, some neurologic patients, such as spastics or persons with poliomyelitis disabilities, have been subjected to retraining measures. The success of these programs is well recognized. Recently, increasing attention has been paid to the treatment of individuals with other disabling neurologic disorders.

From the experience now available in selected centers, it is apparent that almost all disabling neurologic disorders will manifest remarkable improvement, providing adequate and proper treatment is received. Most families would be perfectly willing to care and provide for relatives with

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neurologic disabilities if the patients were only able to handle their personal needs, such as dressing, walking, and feeding themselves.

A training program has been applied in the Veterans Hospital in Minneapolis where, during a period of two-and-one-half years, 289 such patients have been treated. Of these, 226 or 74.7% have been discharged from the hospital and about 90% have attained varying degrees of rehabilitation. It is apparent from this experience that, under a simplified program properly guided by a well-informed physician, a great many individuals with neurologic disabilities, even of severe types, can not only be taught self-care but also, in many cases, can become partially or completely self-supporting.

Obviously, there are not enough neurologists to undertake the retraining of all individuals needing such instruction. As a matter of fact, the problem will have to be and ought to be handled by the general practitioners, who should assume this responsibility as a part of the practice of good medicine. It is only through their understanding as doctors and their willingness to instruct the families and work with the patients that the many individuals with neurologic disabilities can be treated.

## EVALUATION

On the basis of our present knowledge, there are three primary divisions to a neurologic retraining program. The first phase consists of a complete medical evaluation of the patient as well as of his social and vocational situation.

The medical evaluation should determine the type, location, and severity of the illness and an estimation of the expected progress. This evaluation should also include a rough appraisal of the patient's basic intelligence and of his personality make-up. This estimate is particularly important because the interests and motivating forces of the individual, as well as the degree of organic deterioration, will influence the goal set by the physician for recovery in the ultimate outlook for retraining.

The social evaluation should briefly assess information concerning the patient's home situation and the family's attitude toward the patient and his illness. An understanding family can be most helpful to the patient and to the physician. Relatives often fail to cooperate because they do not realize their role rather than because they are unwilling to help.

## SETTING A GOAL

The second phase of such a program consists of setting a definite goal. This must be determined with consideration of the individual's medical and social evaluation. All guidance and therapeutic processes instituted by the physician are then directed toward this goal.

The ultimate object varies from one patient to another. For some of the older, severely involved patients, the maximum aim should be merely to teach the individual self-care activities—how to get about, feed and dress himself, and use bathroom facilities—so that he can be cared for in the home without being a burden to the family. For younger patients, a goal of greater or lesser economic independence may be possible.

In setting the object of achievement, the physician must also keep in mind the nature of the patient's neurologic disability, since the different types of involvements tend to have varying responses to a program of rehabilitation. The major neurologic disabilities can be divided from a prognostic standpoint into five major categories, namely, hemiplegia, ataxia, parkinsonism, flaccid paralysis, and paraplegia.

*Hemiplegia*—Though the symptomatology of hemiplegia is fairly well recognized, it must be kept in mind that the causes of such a disability are many and vary with the age of the patient. Owing to the multiplicity of causes, it is imperative that each hemiplegic patient receive a careful neurologic examination to determine the specific etiology and the effect it may have on his rehabilitation progress.

Hemiplegias are usually much benefited by rehabilitation procedures. All hemiplegic patients, regardless of the degree of involvement, are capable of ambulation if given adequate rehabilitation therapy. The average length of training required is about four months, providing the disability has not lasted for more than one year.

*Ataxia*—The syndrome of ataxia may be due to involvement of the cerebellum or the spinal cord. The spinal types of ataxia are caused by such diseases as pernicious anemia, tabes dorsalis, and multiple sclerosis. Cerebellar ataxias may be the result of tumors, injuries, or degenerations.

Many of these diseases tend to be progressive, but a number have prolonged periods of remission, particularly under adequate treatment. The general outlook for ataxia is less favorable than for hemiplegia, but many patients show considerable improvement under a retraining program.

The average retraining period for this group of patients is about seven months, even though the illness may have been present for years.

*Parkinsonism*—A muscular rigidity often associated with tremor is the primary manifestation of parkinsonism. The disease is slowly progressive and, if not handled properly, may lead to complete invalidism.

Treatment consists of a combination of the intelligent use of drugs, exercise, and emotional readjustment. Because the upper limbs are more frequently involved than the lower extremities, this condition affects self-care activities much more than ambulation.

The average age of these patients is around fifty-five years; about one year is required for retraining.

*Flaccid paralysis*—Weakness of individual muscle groups frequently resulting in a flail limb characterizes flaccid paralysis, which may occur in a large number of conditions, such as cord injuries, peripheral nerve injuries, poliomyelitis, muscular atrophies, and multiple neuritis. The distribution and amount of involvement vary from patient to patient and must be taken into consideration in determining the ultimate prognosis in the individual case.

The outlook for recovery with flaccid paralysis can only be determined by careful and repeated neurologic examinations. Generally the prospect is good in cases caused by self-limit-

ing diseases, and the average length of retraining is three months.

*Paraplegia*—Paralysis of both lower limbs is often associated with impaired control of the bladder and bowel. The classical cases of paraplegia are the result of widespread destruction of the lower part of the spinal cord from injuries, tumors, or infections.

Patients with paraplegia require a great deal of care for the skin, bladder, and bowel. They profit slowly from the various rehabilitation procedures and often require care in a special center.

### PLANNING PROGRAM

The final phase of a neurologic retraining program consists of organizing and guiding the procedures which will help to achieve the goal.

The success of such a program does not depend on a great deal of complicated equipment. For any of the less complicated cases, rehabilitation procedures can be carried out in the home, providing the doctor understands his goal and is willing to spend a little time with the family and the patient in outlining and directing the course of therapy.

### RETRAINING PRINCIPLES

During the acute phases of illness, a large number of patients are kept in bed for a few weeks. It is very important that the bed posture be correct and that supportive measures be instituted to maintain good body alignment so that tension is relieved from weakened muscle groups and contractures do not develop.

Hot packs or radiant heat is used to relieve tight muscles. A portable infrared lamp is a very good source of heat for this early bedside treatment.

Massage suited to the condition will improve circulation and maintain function once voluntary impulse is restored.

Passive motion should be carried out daily on all involved parts, carrying the joint through its full range of motion. The shoulder, hand, hip, and knee joint are particularly important in this respect, because of the rapidity with which contractures set in.

Mobilization of joints is continued and, with the first sign of returning function, the patient is encouraged to assist actively in all movements. Exercise should be carried out daily and the muscles should be worked to a point short of fatigue. Between therapy, footboards or sandbags may be used to hold the foot at right angles and to prevent external rotation of the thigh.

It is obvious that the members of the family can easily be taught to carry out passive and active movements in the appropriate cases. Even pulley exercises can be simply adapted for home use.

Ambulation is started when the patient is strong enough to bear weight on the affected limb. At first, the patient usually sits up in bed and balances himself on the side.

Soon he can be taught to balance himself either by the use of parallel bars or with the support of members of the family.

After this the patient progresses through the normal stages of ambulation, first by walking with support and great assistance, then by the use

of crutches, and finally with canes. Other equipment such as walkers can be used in the home, although these have not been found particularly essential.

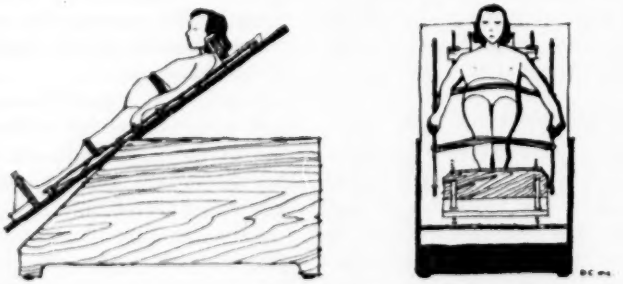
During this period of ambulation the patient can also be taught the necessary self-care activities such as feeding, shaving and washing himself, and the like. These maneuvers can easily be managed with a little patience and effort on the part of the family and with a little guidance by the physician.

It must be pointed out, of course, that the *effort put forth by the patient will largely determine the success of these exercises.*

Throughout this period of retraining, the physician must institute such general medical procedures as would be used in the handling of any disabled individual. Special and supportive drugs are given as indicated for treatment of diabetes, cardiac decompensation, lues, urinary infections, and the like. The physician must also supervise the care of the bladder, skin, and bowel.

Most states have facilities for supplementing home aid in the treatment of disabled individuals. It is the responsibility of the physician to acquaint himself with the state's resources so that they may be utilized to the utmost in obtaining the maximum benefits in the retraining program.

USE OF A TILT TABLE may facilitate restoration to an erect position of a patient who has long been bedridden. The maximum tilt necessary is usually no more than 45°. In the table described by Andrey W. Stevenson, M.D., of New York State Rehabilitation Hospital, West Haverstraw, N.Y., a screw type of automobile jack is used as a mechanical hoist (see illustration). The



plywood, reinforcements, and other fittings can usually be found in any hospital maintenance department. The apparatus can also be used for other therapy such as lower extremity vascular exercises and heel cord stretching.

*Physical Therap. Rev. 29:547-548, 1949.*

# Training of the Hemiplegic Patient

DONALD A. COVALT, M.D.*
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*Prepared for Modern Medicine*

THE approximately 1,250,000 hemiplegic persons in the United States comprise one of the largest groups of patients suffering from chronic neurologic disease. Excellent care was no doubt accorded them during the acute stage of their illness, but once that dangerous period was over, many were sent home and, without further instruction, expected to learn to care for themselves.

One of the chief problems in treatment of the hemiplegic individual today is that the patient is often not referred for rehabilitation training until three, four, or even five years after the cerebral accident. By that time he may have deformities that could have been prevented by simple, early measures.

The physician in charge of the case should recognize his obligation to help the hemiplegic patient return to as normal a life as possible. Usually this retraining may be accomplished in the home by procedures carried out under the direction of a physician, by a physical therapist, a nurse, or member of the family.

## PATHOLOGY

It is important in the majority of cases that an accurate diagnosis as to the cause of the apoplexy be made. According to Wechsler,[1] the neurologic pathology of patients with apoplexy is caused by [1] cerebral thrombosis, [2] cerebral hemorrhage, or [3] cerebral embolism, in that order of frequency.

There may also be a fourth cause of hemiplegia. We have seen patients with a partial paralysis of one side of the body which may last for half an hour or for five or six hours, even a day, and then disappear completely. Some of these patients have frequent episodes of this kind. We believe that spasm of the cerebral vessels may be the cause of this type of hemiplegia.

## SYMPTOMS

The clinical manifestations of apoplexy are both acute and general. The most common general symptom is a disturbance of consciousness, that is, a stupor or coma, which is due to the suddenness, intensity, or extent of the cerebral vascular accident.

The second clinical manifestation is the local or, as it is sometimes called, focal, sign. This reflects the immediate loss of function of the particular part of the brain that is

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affected. The most common focal sign is hemiplegia or paralysis.

### ETIOLOGY

*Cerebral thrombosis* is generally due, first, to pathologic alterations of the walls of the cerebral vessels and, second, to any change in the rate of flow or character of the blood.

Thrombosis occurs frequently in cerebral arteriosclerosis or in any other condition in which the intima of the artery undergoes atheromatous changes. Thrombotic occlusion is most common in patients past middle life and, of course, in advanced old age. Coronary thrombosis may occur in infectious diseases such as typhoid fever or diphtheria, when changes in the vessel wall form a favorable site for thrombosis.

The second most frequent cause of apoplexy, *cerebral hemorrhage*, may be due to arteriosclerotic vascular changes of the cerebral vessels, syphilis of the cerebral vessels, or intoxication, as with lead, alcohol, or infectious disease.

Hypertension alone without cerebral arteriosclerosis and nephritic changes is not sufficient to cause hemorrhage of the brain. Of course, continued hypertension eventually leads to an enlarged heart and to cerebral vascular disease.

It has been estimated that 90% of patients with apoplexy caused by hemorrhage die.

The third cause of apoplexy, *cerebral embolism*, is usually the result of emboli derived from vegetations from the valves of the heart, but also may result from emboli dislodged from the wall of the pulmonary vein or aorta.

The fourth cause of apoplexy may be *spasm of the cerebral vessels*. The origin of the spasm is unknown.

### BRAIN DAMAGE

No part of the brain is exempt from the damage caused by thrombosis, hemorrhage, or embolism.

However, emboli are usually found in the terminal arteries and also in the bifurcation of the larger vessels, such as the carotid and vertebral. These sites may in turn serve as the starting points for thrombosis.

The usual sites of such hemorrhage are the lenticulo-striate and lenticulo-optic arteries. Hemorrhage from these vessels involves the central and basal ganglia with predominant implication of the internal and external capsules of the thalamus and striate body.

Some patients with hemiplegia have a marked emotional instability. They laugh or cry with little or no cause. This changeability is evidence of damage to the thalamus and has been called the thalamic reflex. With the activities and work in an active rehabilitation program, many of these patients become more stable emotionally, particularly as they progress in ability to walk and care for themselves.

### EXAMINATION AND TESTS

A careful physical examination must be made of the hemiplegic patient, including a range of motion and muscle test, and, most important, the activities of daily living test. This test includes the hundred and one different activities that have to do with self-care—learning to dress one's self, to tie a necktie or shoe-

string with one hand, to get up from bed, and to walk and climb stairs once more.

At the end of the examination the physician must exclude the patients who are not suited for retraining. Rehabilitation is not feasible for persons with excessive hypertension, such as a malignant hypertension, those with encephalomalacia, or senile individuals. These must be excluded.

In addition, if the rehabilitation program is to be satisfactory, the patient must start with sufficient will power and motivation to learn to care for himself. The mental and physical status of each patient with hemiplegia must be carefully evaluated.

We have found the following two simple tests to be very helpful in predicting the extent to which the person with hemiplegia can be rehabilitated:

► In the majority of patients with hemiplegia the arm is more severely affected than the leg. Thus, if the patient is able to move his arm on the affected side, he should have sufficient muscle power to walk.

► If the patient is able to raise the affected leg off the bed, he has enough power in his quadriceps to learn to walk again.

### IMMEDIATE PROCEDURES

Rehabilitation procedures should be started early. Mild activity can be begun twenty-four hours after the patient regains consciousness when the hemiplegia is caused by thrombosis and embolism. When cerebral hemorrhage has been the causative factor, the patient should be restricted to mild bed activities for the first three weeks. After that he may be taught to sit up in bed.

The following procedures should be started when the hemiplegic patient is first seen and will help prevent the deformities so commonly observed:

1] A footboard or a posterior leg splint should be employed to prevent foot drop. We have found a new plastic type of fabric called Celastic very useful for posterior splints.

2] Sandbags should be placed against the outer portion of the thigh and lower extremity to avoid outward rotation of the leg.

3] A pillow should be put in the axilla on the affected side to negate adduction of the arm on the shoulder.

4] Quadriceps setting should be started immediately, and should be performed at least fifteen times, four times a day.

### ADDITIONAL EXERCISES

After the acute phase of the illness is over and the physician feels that the patient can be safely started on a program of mild activity, a "U" rope may be made of braided bandage. The ends of the rope are tied to the posts at the foot of the bed and the loop brought up to about 2/3 of the length of the bed so that the patient, lying on his back, can grasp the braided bandage rope easily in his good hand. He then holds his affected hand on the rope with his good hand and pulls himself to a sitting position in bed. This should be practiced at least three to six times daily.

Speech therapy should be started early. The family must be made to realize that although the patient can-

not utilize the tools of language at the moment, he still understands what is said to him and, with practice, should be able to talk again.

Pulley therapy is started by attaching a simple pulley to the wall or head of the bed. A rope and fabric are then wound around the affected hand so that the patient can use his good arm to start motion in his shoulder and prevent the painful or frozen shoulder, both common with this type of lesion.

This activity should be done fifteen minutes at a time, three times daily. The same exercises may be started for the lower extremities in a similar manner.

The patient is taught to sit on the edge of the bed and then is carefully allowed to stand by the side of the bed. Kitchen chairs may be placed on either side of the patient with their backs toward him and, by grasping the back of the chair with his good hand. the patient can be taught to walk with a reciprocal motion, using the chairs as stabilized crutches. By reciprocal motion, we mean putting the right foot forward with the left hand forward, then the left foot and right hand forward.

Short leg braces are needed for approximately half of our patients with hemiplegia. These braces are made of light-weight metal and are double bar braces with a 90° stop. The patient must be taught to walk again, to climb stairs and curbs, and how to get in and out of an automobile.

He must also learn self-care activities, such as how to button his shirt. It must be remembered that function returns last to the affected arm and hand and may never be complete. Even a little return of function may not occur.

REFERENCE

1. Wechsler, I. S. *Textbook of Clinical Neurology*, 338-361, W. B. Saunders Co., Philadelphia, 1933.

# Care of the Paraplegic Patient

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*Prepared for Modern Medicine*

MOST physicians believe that patients with spinal cord lesions can expect death from bedsores or from bladder or kidney infection after a relatively short life in bed or wheel chair.

Our experience, however, with several hundred paraplegic patients, whose paralysis resulted from trauma, tumors, spinal anesthesia, Pott's disease, osteomyelitis, or virus infection, indicates that these patients can be rehabilitated physically, mentally, socially, and vocationally.

Treatment includes six main phases:

*Neurologic care* during acute stage

*Urologic investigation* of kidney and bladder function

*Surgical treatment* of pressure sores and deformities of the joints

*Medical care* to maintain the general health of the patient

*Psychologic management* related to personality changes resulting from loss of motion, of sensation, and of bladder, bowel, and sexual functions

*Physical rehabilitation* to maintain normal range of motion at the joints, to reeducate muscle power, and to condition the patient to meet the demands of daily living.

The rehabilitated patient must move about in bed, get out of bed, care for his toilet needs, dress and eat, ascend and descend steps and curbs, get in and out of cars and trains, sit down and arise from many kinds of chairs, and travel varying distances, sometimes slowly, sometimes speedily.

To attempt to predict what physical activities the patient can perform on the basis of inspection or even the muscle test is unscientific and unfair to the disabled person. No one can predict with any degree of reliability the compensatory ability of a determined disabled individual to perform an activity until he is tested in that activity.

## ESSENTIAL FACTORS

The ideal patient for rehabilitation is in good general condition with no deformities. Blood count and temperature are normal. Serum protein is 6 mg. per cent or better; urine is sterile; and bladder and bowels are emptied on a timed schedule. Bedsores, if any, are completely healed.

He is intelligent and has a desire to care for his daily needs and be able to travel about with the help of braces and crutches. He must have a wheel chair that meets his requirements. Strength, balance, skill, daring, and endurance are essential for rehabilitation.

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*Strength* is acquired by muscular effort and can be attained by every patient. He must develop much more than normal strength in arms and shoulder girdle muscles to be able to carry the trunk and lower extremities with the added weight of braces in ambulatory and elevation activities.

*Balance* exercises are included when the patient has braces and can assume the upright position. Long practice periods of balancing are required by the majority of paraplegic patients, since they have no sensation in the lower extremities.

*Skill* is inherent in the neuromuscular system and may be predicted with a high degree of reliability from the type of work the individual has performed. Some patients never learn to "swing through" their crutches, arise from the floor, climb stairs, or perform any of the activities requiring coordinated movements.

*Daring* is necessary to climb down stairs with crutches when locked in long leg braces with no sensation in the legs. Patients should not be asked to try elevation and descending activities until they have acquired strength, balance, and reached the limit of their skill.

*Endurance* is acquired by repetition. Patients may have the strength to carry body weight but become fatigued and short of breath when asked to travel or climb stairs. Cardiorespiratory conditioning is attained only by sustained effort.

The chief contraindication for physical rehabilitation is evidence of toxicity from the urinary tract or infected bedsores which cause a rise in temperature. Such patients need rest and should not be required to exert energy in strenuous activity.

### EVALUATION OF FINDINGS

Before any rehabilitation program is started, the cause, diagnosis, and level of the lesion, as well as history of previous operations should be ascertained.

Cord lesions produce motor and sensory disturbances below the level of the lesion, with a loss of the normal function of the bladder and bowels. These disabilities predispose the patient to bedsores and deformities of the joints.

A complete lesion at C-7 or above prevents the patient from becoming ambulatory, because the power of the extensors of the forearms and fingers, necessary for manipulation of crutches, is lost. A lesion at C-6 causes loss of the extensor power but does not disturb the ability to flex the forearms. With the aid of a wheel chair and attendant, the patient can perform many self-care activities and be trained in a vocation.

The paraplegic patient with a complete lesion above T-10 will need a low Knight spinal brace attached to the long double leg braces and pelvic band, because of the loss of power in the abdominal muscles. A patient with a lesion above T-10 is much more difficult to rehabilitate than one with a lesion below that section of the cord.

The areas of anesthesia give a general idea of the height of the lesion. The nipple line represents about the fifth dorsal, while the umbilicus is at approximately the tenth dorsal.

*(Continued on page 110)*

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Sensory findings are particularly important if any heat, massage, or manipulation procedures are to be prescribed. Patients who have no sensation in the lower extremities may acquire wounds, muscle injuries, sprains, and even fractures without their knowledge. Great care, therefore, is necessary in fitting braces and in prescribing exercises and self-care and ambulatory activities. Because of the sensory changes, the extremities should be examined repeatedly for wounds, redness, swelling, and deformities.

The location and extent of open and healed pressure sores must be considered. Plastic surgery may be advisable.

Many patients do not have transection of the cord. If muscle tests indicate possibility of return of function, a muscle reeducation program similar to that given poliomyelitis patients should be instituted.

If there are limitations of motion at the joints, the cause should be determined. Orthopedic consultation is advisable to ascertain the best methods of treatment. Spasticity may be overcome by braces. Contractures which occur most frequently as a result of early improper care may require surgical treatment, plaster casts, braces, or manipulative and exercise therapy.

Neurologic or orthopedic disabilities are not likely to cause serious acute conditions, but abnormal functioning of the kidneys or bladder is potentially serious. The patient may consider himself a social outcast if he is unable to control urination.

Bowel elimination is usually satisfactorily controlled by an enema, suppository, or mineral oil.

### EXERCISES AND ACTIVITIES

When medical findings, physical examination, and tests of movements, strength, and functional activity have been evaluated, the physician is prepared to prescribe a program. This program includes exercises (Table 1) to develop strength, flexibility, balance, and agility in order to perform the functional activities (Table 2) of daily living.[1]

Table 1. Exercises

1. Bed exercises
2. Wheel chair exercises
3. Mat exercises
4. Walking exercises in parallel bars
5. Standing exercises with crutches
6. Crutch gait drills
7. Crutch walking

Table 2. Functional Activities

1. Nonwalking activities
   a. Bed activities
   b. Toilet activities
   c. Eating and drinking activities
   d. Dressing and undressing
   e. Hand activities
   f. Wheel chair activities
   g. Elevation activities
2. Walking activities
   a. Progressing activities
   b. Climbing activities
   c. Traveling activities

All paraplegics should learn at least two crutch gaits: a fast gait for making speed in the open, and a slow one for crowded places where balance must be maintained during delayed progression. Knowledge of more than one gait is useful because each requires different combinations of muscle groups. When the patient becomes fatigued with one he can

(Continued on page 114)

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A good basis on which to plan breakfast is a widely accepted basic breakfast pattern consisting of fruit, cereal, milk, bread and butter. This pattern provides 611 calories and supplies virtually all essential nutrients in excellent quantity and proportion. Its main dish—the cereal serving consisting of cereal, milk, and sugar—makes a worthwhile nutritional contribution, is notable in economy, and provides almost endless variety in taste and physical form.

*Reprint of the first study available on request; the results of the second and third studies will be published shortly.

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change to another and allow one group of muscles to rest while another works. Thus all possible locomotive muscle groups may be strengthened.

Of the seven types of crutch gaits available to the patient with lower extremity disability, those best suited to the paraplegic are:

Tripod crutch gaits
- Alternate
- Simultaneous

Swinging crutch gaits
- Swinging-to
- Swinging-through

Four-point crutch gait

### MAINTENANCE OF NUTRITION

Physical and emotional well-being of the paraplegic patient depends upon maintenance of nutritional status at a high level.

A diet of 2,500 to 3,000 calories a day may be necessary to maintain weight. While the patient is rebuilding wasted muscle tissue and strengthening muscles during increasing activity, at least 100 gm. of protein daily is essential. To assure adequate protein, the daily diet should include 2 servings of meat, fish, or poultry and 2 eggs, together with bread, cereals, milk, and other foods.

Vitamin requirements need special attention. Extradietary sources of vitamins are desirable. For the most part, the patient's needs can be met by multiple vitamin capsules with additional vitamin therapy when indicated.

Fluid intake should be liberal. Water should be drunk frequently during the day. Salt restriction is not necessary because of the salt loss through perspiration during exercise.

The success of any diet, of course, depends upon whether the patient eats it. A diet must appeal to the appetite, give a general feeling of satisfaction, and not put too great a strain on the patient's economic resources.

### BEDSORES

The two most serious effects from spinal cord paralysis are decubitus ulcers and loss of bladder control.

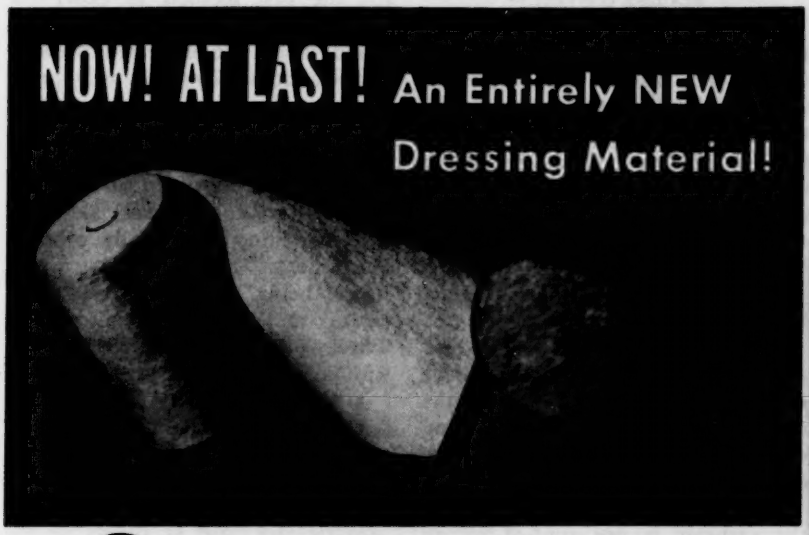
The ulcer is usually caused by pressure on the skin and subcutaneous tissue which thereby interferes with local blood supply and produces an area of necrosis. The bony prominences of the sacrum, iliac spines, and trochanters are pressure points where ulcers usually occur.

Precautionary measures against decubitus ulcers include:

- Turning the patient frequently or teaching him to move about in bed
- Daily bath with soap and water and thorough drying
- Rubber rings and pads over bony areas
- Clean, dry bed linen and clothes
- Daily checking of braces for pressure or friction points
- Keeping hot water bags away from the skin in areas that lack sensation
- Maintenance of nutrition
- Daily examination of the skin for discoloration and blisters—signs of beginning ulcers.

Treatment of decubitus ulcers is both general and local and includes high-protein diet, clean and sterile bandages of superficial ulcers, and débridement enclosure by skin flaps of a deep ulcer. Skin grafting should be used only when it is impossible to transpose full-thickness flaps.

# For hundreds of years..."Bandage" meant Gauze...

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**IT CLINGS TO ITSELF** . . . AND NOT TO THE PATIENT! Wind this bandage around the limb—you don't even have to hold it, each layer clings to the one below. For padding, apply odd lengths, rub . . . and *it stays!*

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**RESEARCH TO IMPROVE TECHNIC... TO REDUCE COST**

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BLADDER CONTROL

Urologic evaluation includes a urologic examination, measurement of urinary *p*H, bladder capacity, residual urine, intravenous pyelogram, cystometric reading, cystourethrogram, and observation cystoscopy. When the urinary tract is in the best condition possible, training for urinary control is started.

The principles in control are:

● *Prevention of damage to the bladder if artificial drainage is used*

When a suprapubic or urethral catheter is necessary, the patient should see that the tube is in the correct position and is not kinking or compressed. Blocking of urinary outflow may lead to infection.

The patient should be careful that the catheter is not pushed in on the bladder wall when he turns in bed. Patients who have artificial drainage should have periodic examination by a urologist.

● *Maintenance of adequate bladder capacity*

During hospitalization, bladder drainage is attained by some form of "tidal drainage." Retention of urine in the bladder causes stagnation and may result in hydronephrosis with infection, stone formation, and loss of kidney function. The patient must be trained to recognize as signs of bladder distention sensations of burning and pressure or pain which may be referred to the bladder, suprapubic area, root of the penis, or lateral aspects of the thighs.

● *Training in voiding*

Restoration of efficient emptying of the bladder with least possible amount of residual urine is essential. The patient must discover by himself the best method to expel the contents of the bladder. Procedures found useful are increased pressure on the abdomen by strain or by pressing the fists in the abdomen while bending forward, rubbing the penis or thighs, or changing position.

● *Recognizing symptoms of infection of the urinary tract*

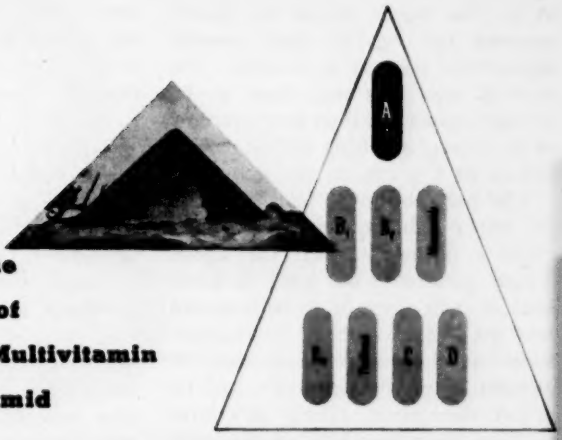
Active infections usually produce headache, rise of temperature, a feeling of being "off-color," loss of appetite, and abdominal discomfort. These symptoms are usually relieved with irrigation and medication.

● *Keeping dry day and night*

For the male patient, the rubber urinal is recommended for use during the active day. The urinal should be simple to apply, have a large receptacle bag, and fit snugly to the penis. A one-way valve is desirable so that urine cannot leak back from the receptacle. A foul-smelling bag may be avoided if the patient has two urinals, so that one can be cleaned while the other is in use. To clean, the bag is flushed first with water, then with a soap solution, followed by more water, a 1% solution of sodium acid phosphate, and finally with water again.

Whenever possible, the urinal bag should be removed because of several dangers inherent in its use. First, ulcers may occur on the penis and scrotum. Secondly, the patient feels safe, becomes lazy, and does not strain to empty his bladder. Residual urine accumulates with its sequelae.

At night the urinal bag should be removed and a rubber sheet placed between the under sheet and the mattress. A male duct, glass or metal, is placed so that the penis rests easily

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# THERA-VITA 'Warner.'

**with Synthetic Vitamin A without fishy after-taste**

The problem created by repugnant fishy after-taste in vitamins is solved by THERA-VITA* 'Warner'. The vitamin A in THERA-VITA* is the new synthetic Vitamin A Acetate 'Warner' which has been demonstrated to be as stable and biologically active as the most highly refined and purified natural vitamin A but is devoid of the all-too-common distasteful fishy after-taste and odor of the natural product.

## The formula of THERA-VITA

Each capsule contains:

| | |
|---|---|
| Vitamin A (synthetic vitamin A acetate) | 12,500 U.S.P. Units |
| Vitamin $B_1$ (thiamine hydrochloride) | 10 mg |
| Vitamin $B_2$ (riboflavin) | 10 mg |
| Niacinamide | 100 mg |
| Vitamin $B_6$ (pyridoxine hydrochloride) | 1 mg |
| Panthenol (equivalent to 11.8 mg d-Calcium Pantothenate) | 10 mg |
| Vitamin C (ascorbic acid) | 150 mg |
| Vitamin D (activated ergosterol) | 1,250 U.S.P. Units |

## Indications for THERA-VITA

THERA-VITA* is particularly indicated for intensive therapy in vitamin depletions or deficiencies due to, or accompanying febrile diseases, allergic disorders, hyperthyroidism, inadequate diet, surgical operations, gastrointestinal disturbances, pregnancy.

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*T. M. REG. U. S. PAT. OFF.

New York St. Louis Los Angeles

in it. The bottle should be placed between the legs so that pressure against the testicles is avoided. The neck of the duct may have to be elevated. Since the duct may overflow or be upset, a tubing should be attached to a bottle on the floor.

The patient should learn to sleep on either side; spastics usually require a pillow between the knees. Those patients who move a great deal in their sleep or go into spasms may get wet in spite of precautions. Some of these can be trained to awaken at regular intervals and readjust themselves; others may have to have their legs tied to the sides of the bed, care being taken to prevent bedsores.

If a catheter is used, particularly the Foley type, it should be changed frequently to prevent the formation of calculi. Small catheters should be employed, since tubes of large diameter cause ischemia of the urethra with resulting fistulas, usually at the scrotal-penal junction.

Problems of the female patient in obtaining bladder control are somewhat different. An attempt is made to establish an automatic bladder through a definite and systematic regimen. The most successful method is to have the patient use the bedpan at regular intervals.

The patient is instructed in methods of emptying the bladder and in holding back any voiding that may occur between times. The fluid intake is recorded during the day and discontinued after the night meal. When the patient is successful in following the hourly schedule, the interval is increased to two hours, then three and four hours. These schedules are continued throughout the twenty-four hours, and the patient is awakened on schedule so that the routine is not interrupted.

If leakage of urine occurs between periods of voiding, a protective pad may be used. This consists of a piece of muslin 26 in. long and 12 in. wide. About 8 in. from each end, the cloth is shaped to a 7-in. measurement in length and an 8-in. measurement in width in the center. This 7- by 8-in. area is covered by a rubber material to protect the outer part of the muslin. A second layer of rubberized material over this area has a 4-in. opening in the center. This forms a pocket in which absorbent material, such as cellucotton, Kotex, or plain absorbent cotton, is placed. The entire pad is worn as a pair of briefs with snaps or hooks and eyes to fasten about the waist.

The advantages of these briefs are:

1] The patient can open the briefs with great ease and change the pad.

2] The waterproof material protects all garments.

3] Briefs are washable.

A most promising outlook may be expected from a urinary standpoint if the paraplegic learns the best methods of caring for his urinary control and takes the time to carry out the procedures. Although a perfectly normal-acting urinary tract cannot be obtained, an abnormal one may be substituted.

REFERENCE

1. Deaver, George E. *Evaluation of Disability and Rehabilitation Procedures of Patients with Spinal Cord Lesions. Studies in Rehabilitation, No. 5.* Institute for Crippled and Disabled, 500 First Ave., New York City, 1947.

#151

#155

# Mother Nature taught us a thing or two!

When it comes to baby feeding, first honors go to Mother Nature, of course. That's why we followed her pattern so closely when we designed the Davol Anti-Colic* brand "Sani-Tab" Nipple.

This "second-to-nature" nipple is similar to the maternal breast because it has a short tip and firm, sloping shoulder.

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We've given a thought to timing, too—so the Davol Nipple gives most babies the recommended 20 minutes of sucking action at each feeding.

"Anti-Colic" brand Nipples are made in two types—#151 for narrow-neck bottles; and #155 for the nurser-style, wide-neck bottles.

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**FORMULA:** Each specially constructed tablet contains Pancreatin, U.S.P., 300 mg.; Pepsin, N.F., 250 mg.; Bile Salts, 150 mg.

**DOSAGE:** One or two tablets after each meal, or as directed by physician, without crushing or chewing.

**AVAILABLE:** Bottles of 25 and 100.

**REFERENCES:**


1. Kammandel, N. et al.: Awaiting publication.
2. McGavack, T. H. and Klotz, S. D.: Bull. Flower Fifth Ave. Hosp., 9:61, 1946.
3. Weinberg, J., McGavack, T. H. and Boyd, Linn J.: Am. J. Digest. Dis., 15:332, 1948.


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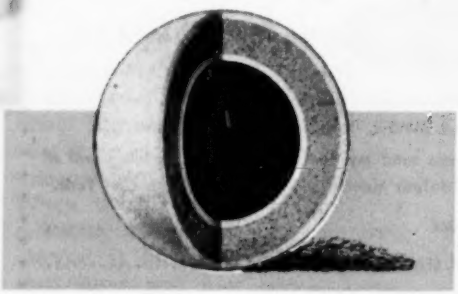

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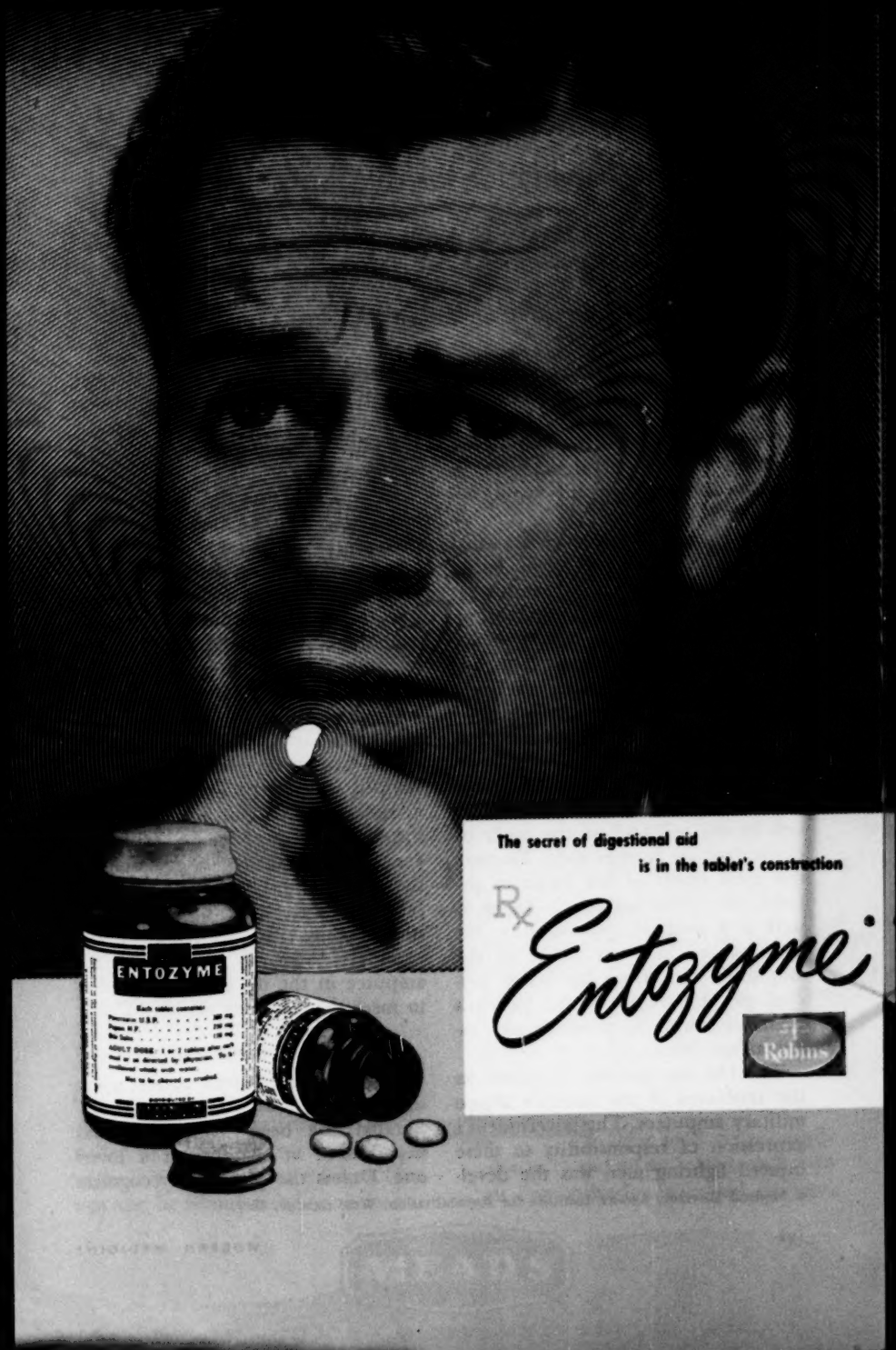


The secret of digestional aid
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Robins

# Rehabilitation of the Amputee

HENRY H. KESSLER, M.D.*
*Kessler Institute for Rehabilitation, West Orange, N. J.*

*Prepared for Modern Medicine*

PARALLELING the development of specific technics in amputee care during the last decade has been the evolution of a new concept, of equal if not greater significance in the rehabilitation of the handicapped.

The physician, who once regarded the amputee as a pathologic entity only, is now beginning to see him as a "whole man," a composite of indivisible physical and psychologic factors. The physician cannot treat one element, neglect the others, and consider his responsibility discharged.

As we learn more about the integration of the mind and the body, we realize that the days when the physician's work was bounded on one side by the pill and on the other by the scalpel are forever over. To meet the total needs of the amputee patient, the physician has a social as well as a medical responsibility. He has a share in every phase of the amputee's care, from the initial psychologic preparation to the patient's eventual return to a useful and independent life.

The last war focused attention on the problems of the nation's 18,000 military amputees. The government's expression of responsibility to these injured fighting men was the development of a full program of rehabilitation, with the result that our military amputees returned to civilian life equipped to meet the varying demands of their environments.

But the fact that the civilian problem is greater than the military one should not be ignored. During the war period, 120,000 civilian amputations resulted from accidents, disease, and congenital deformities. The problem, then, is to make the complete rehabilitation program available to this far larger number of civilian amputees. How are we to accomplish this?

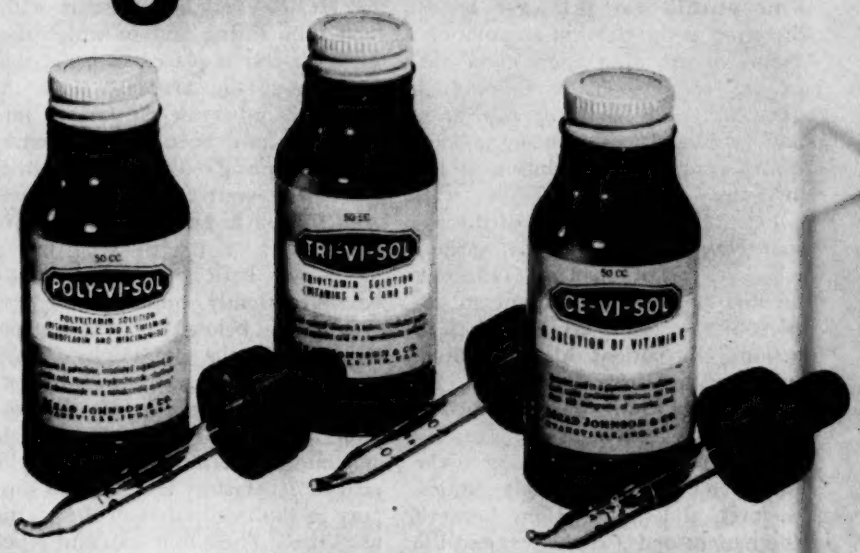
Five basic principles have been developed which, modified to meet the needs of each patient, form the basis for amputee care. These principles are [1] psychologic preparation of the patient, [2] adequate surgery, [3] after care of the stump, [4] selection, fitting, and servicing of the prosthesis, and [5] training of the amputee in the use of the prosthesis to meet the demands of daily living.

## PSYCHOLOGIC PREPARATION

The emotion felt by a person when told that he must have a limb amputated has been likened to that experienced at the loss of a loved one. Unless the physician recognizes

* Medical Director, Kessler Institute for Rehabilitation, West Orange, N. J.

# 3 new water-soluble liquid vitamin preparations




### Poly-Vi-Sol

Each 0.6 cc., the usual daily dose, supplies:

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| Vitamin A | 5000 USP units |
| Vitamin D | 1000 USP units |
| Thiamine | 1.0 mg |
| Riboflavin | 0.8 mg |
| Niacinamide | 5.0 mg |
| Ascorbic Acid | 50. mg |

### Tri-Vi-Sol

Each 0.6 cc., the usual daily dose, supplies:

| | |
|---|---|
| Vitamin A | 5000 USP units |
| Vitamin D | 1000 USP units |
| Ascorbic Acid | 50 mg |

### Ce-Vi-Sol

Each 0.5 cc., the usual daily dose, supplies:

| | |
|---|---|
| Ascorbic Acid | 50 mg |

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Soluble in Water and other liquids
Scientifically Formulated
Pleasing to the Taste
Convenient to Administer
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## indications

All of these preparations are ideally suited for the routine supplementation of the diets of infants and children. They can also be administered to adults.

## administration

Any of these preparations can be stirred into infant's formula, into fruit juice, milk or other liquid, or mixed into cereal, pudding, or other solid food. They can be given with a spoon or dropped directly into the mouth.

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and lessens this psychic trauma, the amputee will be left with a permanent psychic scar that may be as disabling as the physical amputation. Before or just after amputation, the patient is tortured by a hundred questions about his future as a social and vocational human being and requires sympathetic resolution of his anxieties.

Psychologic preparation of the patient can be achieved by various means. Perhaps the most effective method is giving the patient an opportunity to see other amputees in action. The patient, his competitive spirit aroused, feels challenged to accomplish the things that the successful amputee has managed.

Other means of preparation at the physician's disposal include motion pictures, slides, discussions between the patient and a counselor, and the like. If the physician understands the patient as an individual with a complex of emotions, motivations, requirements, and personality traits, he will be able to select the methods of psychologic preparation that evoke the greatest response in each case.

### ADEQUATE SURGERY

In the surgery of amputation, the most important consideration after arrest of the pathologic process is provision of a stump which will enable the patient to wear a prosthesis with comfort and utility. Emergency open-flap amputations such as the guillotine type will always be employed to save life, but these provisional procedures will have to be modified later by revision of the stump or, occasionally, by reamputation.

The surgeon works to attain a properly shaped stump which is of the greatest length consistent with good limb fitting and in which the operative scar is placed to avoid the pressure of the artificial limb. A number of otherwise satisfactory amputations have been made obsolete by limb-fitting difficulties; other standard operative procedures have been revised to facilitate limb wearing.

The four basic types of leg amputations currently employed are the Syme's, the below-knee, the Stokes-Gritti, and the midthigh. These sites have been determined by experience, and they represent the best location to supply the bone length and muscular attachment which will provide satisfactory leverage and support in the manipulation of an artificial limb. These four standard types meet most average requirements, although a modification of one may be indicated under special conditions.

In dealing with the surgical requirements of the leg amputee, we find that most of the problems are mechanical in nature. However, arm amputation demands of the surgeon considerably more than mechanical adequacy, because selection of the proper operation must be based upon personal as well as mechanical considerations. A number of special procedures, therefore, have been developed to meet the less standardized needs of the arm amputee.

The cineplastic operation is a recent development which makes possible the activation of an artificial arm by the healthy muscles remaining in the stump. The muscle is

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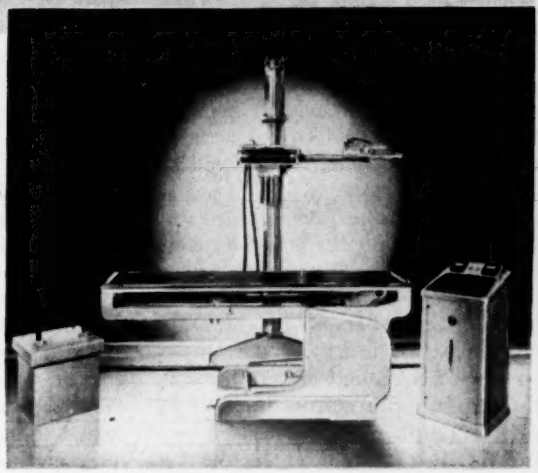

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Start out with the simplest 15MA tubehead; then at a future date change to a 30MA tubehead, if you desire. Whenever you're ready, step up to a 100MA generating unit.

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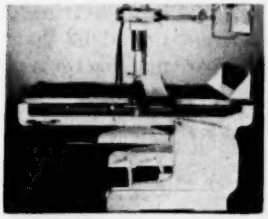

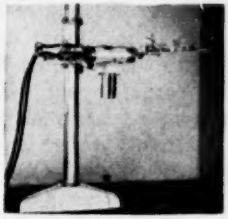

incised, and a hollow tube of skin is inserted into it. An ivory peg, introduced later in this canal, is attached by a system of levers to the prosthetic arm. A considerable degree of control is possible. Since this motor may be laid in the pectoral as well as the arm muscles, cineplasty offers the only possibility of wearing a prosthesis to the patient with a disarticulated shoulder.

Another technic of considerable value in specific cases is the Krukenberg operation. This procedure is used for the blind patient who has lost both arms because it retains the vital sense of touch in the stump. In the Krukenberg operation the forearm stump is spliced into the radius and ulna and the necessity for a prosthesis on one arm is avoided. Thus prehensile power is provided without impairment of the sense of touch.

### AFTER CARE OF STUMP

Immediately after amputation, certain changes take place throughout the stump making it actually a pathologic organ. Since one of the most important causes of poor prosthetic fit is an inadequate stump, the surgeon must direct considerable attention to this phase of amputee care.

Postoperatively, the stump has a swollen, rounded appearance because of the excessive production of fibrous tissue. Gradually, however, as the tissue elements participate in a generalized atrophy, the contour of the stump changes from cylindrical to conical. The atrophy varies considerably in rapidity and duration.

Since shrinkage, which is actually unpredictable, influences greatly the fit of the prosthesis, this factor should be recognized and dealt with carefully. Elastic bandages, properly applied, can expedite the contraction, and fitting of the artificial limb should be delayed until some shrinkage has taken place. It may be necessary to modify the socket of the prosthesis some time after amputation, when the shrinkage has become stabilized.

Following amputation, improper posture and muscle imbalance are usually responsible for another of the common postoperative sequelae—contracture. This very troublesome complication can best be prevented by proper position in bed and by traction and is corrected by manipulation and exercise. Many of the failures in limb fitting can be ascribed to persisting contractures.

### PROSTHESES

Artificial limbs are available in such a variety of designs, materials, and weights that the problem of selecting the prosthesis is among the most baffling quandries that the newly amputated patient faces. The important consideration, however, is not the construction, but the fit of the limb. A thoroughly qualified and experienced limb fitter is, of course, essential.

The physician should consider it part of his responsibility to supervise the choice, fabrication, and fitting of the artificial limb, bearing in mind that selection should be determined by the patient's background and by his future social and vocational demands. This is especially true in the case of the arm amputee.

*(Continued on page 130)*

# RAMETIN TABLETS

## Crystalline Vitamin B-12

## FOR ORAL USE

CLINICAL evidence now indicates that in addition to its hematopoietic, clinical and neurological effects, CRYSTALLINE VITAMIN B-12 is definitely suggested as a nutritional and growth factor.

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(WETZEL et al., SCIENCE, Dec. 16, 1949)

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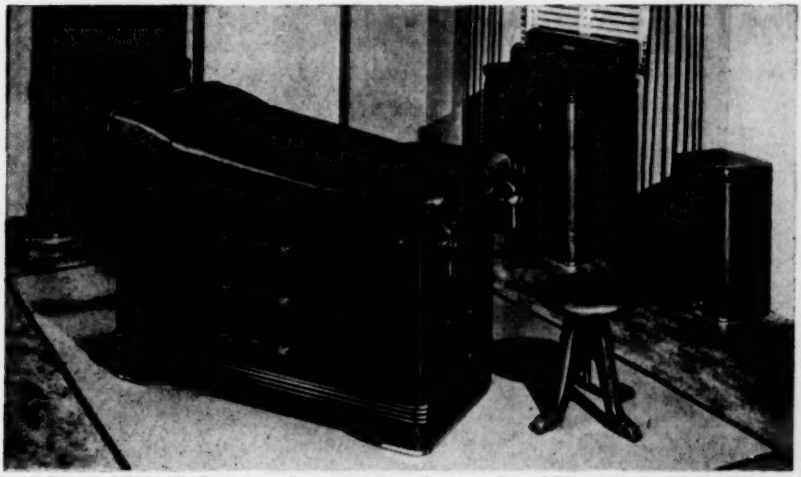

Nu-Tone . . . Hamilton's finest suite of examining room furniture. Beautifully matched woods combined with exclusive, patented Hamilton convenience features.

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where, instead of fitting the prosthesis to the patient's stump, we fit it to his entire personality.

Arm prostheses are built, with varying degrees of success, to substitute for one or both of the major functions of the arm—appearance and utility. The relationship of these factors is determined in each case by the user's needs. Women, patients past working age, and workers who must meet the public are best served by a dress arm with only rudimentary function. Manual workers must subordinate appearance to additional usefulness and, for them, the split utility hook is most frequently the prosthesis of choice. This hook is generally preferred to the heavy, complicated mechanical hand.

### TRAINING

No matter how good the prosthesis is or how carefully selected and fitted, the artificial limb does not immediately become a part of the amputee's body and assume all the learned and automatic functions of the missing member. Thorough training in use of the prosthesis is essential for the full rehabilitation of both arm and leg amputees. Thousands of amputees have discarded their prostheses, thousands of artificial arms and legs lie at home unused but usable, because this fifth and vital phase of amputee care has been neglected.

A fully equipped and adequately staffed rehabilitation center is by far the most desirable medium for amputee training. In such a center all the modalities of physical medicine are available in one place, and the patient benefits immeasurably from the highly individualized program thus made possible. These centers may be operated as part of a general or orthopedic hospital or be maintained independently.

Graded exercise, muscle development, stump care, and training in balance and walking are offered in the physical therapy ward under the direction of trained therapists. An occupational therapy workshop is available for the development and practice of specific skills and for recreation and vocational exploration. A qualified vocational counselor conducts tests and, if the amputee's former job is no longer feasible, advises and guides him in the selection of, and preparation for, a suitable vocation. Constant medical and nursing supervision is provided, and additional psychotherapy made available.

Training in walking requires about a month for the amputee who has lost one leg. The program includes instruction and practice in balance and in walking on the level, on more difficult types of terrain, and in coordination with arm movements. Training and practice in sports and recreational activities are also given. More time is required for the person with double leg amputation, but usually he is able to walk with little or no support at the end of the fourth week of training.

The arm amputee receives training in the use of the prosthesis to meet routine daily demands. The occupational therapy workshop is of special benefit to the single or double arm amputee. After the patient has been discharged from the training center, the doctor should insure follow-up contact so that the amputee achieves lasting adjustment.

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relief

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vaginitis cervicitis

# westhiazole vaginal

single dose applicators

*Samples*

# The Physical Treatment of Backache

HANS KRAUS, M.D.*
*New York University, New York City*

*Prepared for Modern Medicine*

No major pathology can be found in many patients with low back pain even after thorough internal, neurologic, and orthopedic examinations.

In such individuals, as well as in others with so-called "osteoarthritic" backs, simple muscle tests frequently show weakness of trunk muscles and shortness of back and hamstring muscles and of the fascia lata. Tenderness of subcutaneous tissues and deep local tenderness are other symptoms frequently noted in patients with low back pain when examinations are otherwise negative.

The usual examination of the painful low back—except in acute cases—should therefore be supplemented by a muscle test and by a search for local tenderness in the back and hip regions. The tests should not be performed, however, until the possibility of major pathology has been precluded and the patient is free of pain.

## MUSCLE TESTS

Appraisal of trunk muscle strength is easily made as follows:

The patient is placed in a supine position with hands joined behind his neck. He is then held by the ankles and asked to raise himself to a sitting position without assistance. If he can do so from a supine position his "upper abdominal" strength is graded as full, or 10.

If he cannot do so, his head and chest are raised and supported passively until he reaches an angle from which he is able to complete the movement himself. If full support is required throughout the entire range he is rated 0, through half range 5, and so forth, allowing an approximate gauge from 10 to 0.

The same test is then performed with the patient's knees and hips flexed and his feet held close to his buttocks. This position eliminates the assistance of hip flexors and thereby allows measurement of straight abdominal muscles. The rating is the same as before.

Finally, the patient is asked to raise both legs from the surface at an angle of approximately 30° and hold this position to a slow count of 10, ten seconds. Here the rating is again on a 0 through 10 basis, according to the number of seconds the patient can maintain the position. This test deals primarily with the hip flexors and the psoas muscle and measures the lower abdominal strength.

If all these three tests are combined, a reasonable idea of abdomi-

* Assistant Professor of Rehabilitation and Physical Medicine, New York University, New York City.


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nal strength and hip flexor strength can be derived without paying too much attention to compensatory movements of the pelvis.

The patient is then placed in a prone position with a pillow under his hips. Support is given to his ankles and the low back region and, with his hands behind his neck, he is asked to raise his chest and hold this position to the count of 10. Thus the upper back muscle strength is tested.

Support is then given to the low back region and the upper back, and the patient is asked to raise both legs straight simultaneously, and to hold the position to the count of 10. The number of seconds establishes the rating.

These tests for trunk muscle strength are supplemented by rating the length of back muscles and hamstrings. Total back muscle and hamstring length is found by asking the patient to touch the floor with the knees straight. The distance from the finger tips to the floor gives the rating in minus inches.

The length of hamstrings alone can be determined by having the patient rest on the table in a supine position and raise one leg passively until it causes the contralateral hip or knee to move. The angle between the thigh and the table gauges the hamstring length. Normally this angle should exceed 80°.

### TEST EVALUATION

Test results can be written down in a formula which, if used consistently, allows a quick appraisal of the muscular situation. The formula is as follows:

$$\frac{\text{Upper abdominals}}{\text{Lower abdominals}} \quad \frac{\text{straight}}{\text{abdominals}} \quad \frac{\text{upper back}}{\text{lower back}}$$

back-hamstring muscles

hamstring muscles $\frac{\text{left}}{\text{right}}$

The normal formula would be:

$$A\ \frac{10}{10}\ 10 \qquad B\ \frac{10}{10}$$

$$BH+t$$

$$H\ \frac{90}{90}$$

Deficiencies can be easily spotted in "postural" or "muscular" backs by this method.

In reviewing a large number of these cases, we find two predominant types of pain:

► One type of patient has fatigue pain and shows chiefly trunk muscle weakness, often accompanied by back muscle and hamstring shortness. This patient will be helped primarily by strengthening exercises for the trunk muscles.

► The other type has pain mainly on transition from rest to movement—"jelling" pain—and has chiefly tightness of back muscles and hamstring. This patient will be helped primarily by stretching exercises for these muscles and benefits from histamine iontophoresis and shortwave diathermy as supplementary prescriptions. Many osteoarthritic backs belong in this category.

### LOW BACK PAIN THERAPY

Cases of muscular or postural low back pain may become evident in acute attacks, such as are caused by lifting or by sudden movements often classified as strains. The leading symptom is painful limitation of back motion, sometimes with radiation to the thigh flexors.

*(Continued on page 138)*

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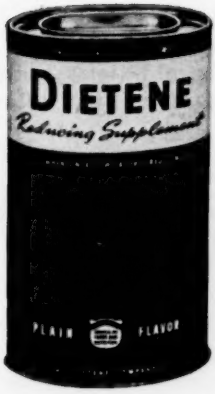


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Local surface anesthetics, such as ethyl chloride spray, in combination with very gentle exercises of the relaxing type may be beneficial.

A simple exercise may be performed by the patient lying on the side with knees and hips in semiflexion. He is then asked to slide the upper leg gently toward the chest, bring it down again to the starting position, relax, and repeat the same movements 2 or 3 times on each side. These simple exercises should be performed for one or two minutes every half hour.

If these instructions are followed, any continuous strain such as standing or working in the same position, lifting, and the like is avoided, and if a hard mattress and board are used, relief can be had in a satisfactory number of cases.

### THERAPY OF TENDERNESS

Tenderness of the subcutaneous tissue is frequently associated with the symptoms of muscular back but is often found alone, especially in the shoulder region. This "fibrositis" is favorably treated by pinching massage, which should be preceded by infrared radiation to lessen pain.

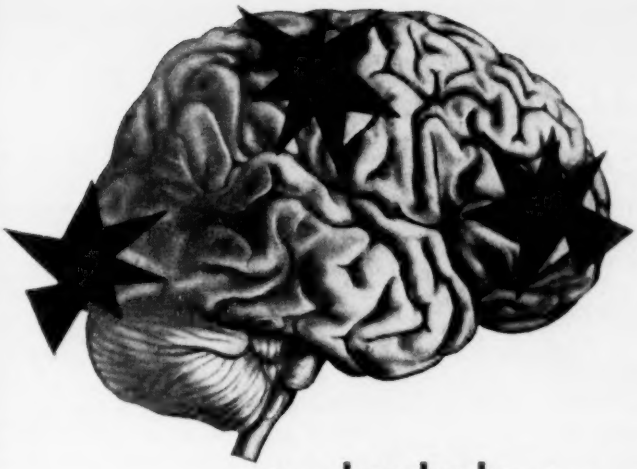
Patients with low back pain and deep local tenderness are frequently helped by procaine injection into the localized tender regions. These areas have been called trigger points and are probably identical with what older authors used to call myogeloses.

Deep point massage is of assistance when the deep tenderness is less localized and is not alleviated by procaine infiltration.

It must be emphasized that all these procedures may require considerable time and that, particularly for patients with major muscle deficiencies, several months may be necessary until normal conditions are restored. Before that goal has been attained, the pain often subsides, but an attempt should be made to regain normal standards in order to avoid recurrence.

### REFERENCE

Kraus, Hans *Principles and Practice of Therapeutic Exercises,* Charles C Thomas, Springfield, Ill., 1949.



# when headache is a problem
# Edrisal is the logical answer

". . . in the vast majority of patients . . . psychologic factors are present which tend to increase the frequency and severity of headaches . . ."

*Friedman, A. P., and Brenner, C.: N.Y. State J. Med. 45:1969*

Edrisal is remarkably effective in headache, even in difficult psychogenic cases. For Edrisal is the only analgesic preparation that contains 'Benzedrine' Sulfate—the rational anti-depressant. Edrisal, therefore, not only relieves the pain itself but also—by lifting your patient's mood—relieves his concern with pain. Best results are usually obtained with a dosage of *two* Edrisal Tablets—repeated every three hours, if necessary.

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*Each Edrisal* tablet contains Benzedrine* Sulfate (racemic amphetamine sulfate, S.K.F.), 2.5 mg.; acetylsalicylic acid, 2.5 gr.; and phenacetin, 2.5 gr. Available on prescription only.*

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# *Diagnostix*

*Here are diagnostic challenges presented as they confront the consultant from the first clue to the pathologic report. Diagnosis from the Clue requires unusual acumen and luck; from Part II, perspicacity; from Part III, discernment.*

## Case MM-161

### THE CLUE

ATTENDING M.D: The next patient is a fifty-year-old man who entered the hospital because of severe lower abdominal cramps. In the past few years he has had numerous similar episodes lasting but a few minutes. The present attack persisted for over two hours. He was nauseated but did not vomit.

VISITING M.D: Does the patient know of anything which influences the pain?

ATTENDING M.D: Yes. He is always constipated for two or three days before an attack, and obtains some relief by pressing firmly on the lower abdomen.

### PART II

VISITING M.D: Have other symptoms been noted?

ATTENDING M.D: The patient has not been in good health for the past three years. During this period he has lost 30 lb. and now definitely appears undernourished. His appetite has been poor, and recently he has noted weakness especially in his hands and wrists. For several months he has had trouble walking and climbing stairs. The most persistent symptom, however, has been obstinate constipation.

VISITING M.D: The story is certainly that of a chronic illness which seems to have culminated in the acute present illness. Does he have dyspnea when climbing stairs or with other exertion?

ATTENDING M.D: No. Cardiac symptoms have not been noted. The trouble seems to be a muscular weakness of the feet and legs.

When I first saw the patient he was lying doubled up in bed and pressing with both hands on his lower abdomen. Physical examination re-

vealed normal pulse rate, temperature, blood pressure, and respiratory rate. The head and neck were normal except for lack of teeth. The heart and lungs were clear by both auscultation and percussion. The abdominal wall was tense but not rigid. The abdomen was not tender to deep palpation, nor were viscera palpable. Rectal examination revealed only hard feces in the ampulla.

VISITING M.D: How about the neurologic examination?

ATTENDING M.D: Positive findings were confined to the distribution of the radial and peroneal nerves. We found moderate bilateral weakness in the extensor muscles of the wrists and fingers and in the peroneal muscles of the legs. Sensation was intact.

## PART III

VISITING M.D: Motor weakness in the distribution of the radial or peroneal nerves, or both, with chronic severe constipation and abdominal colic suggests a diagnosis to me. Does it to you?

ATTENDING M.D: Frankly, no.

VISITING M.D: Well, let's hear the laboratory findings.

ATTENDING M.D: Hemoglobin 12 gm., erythrocyte count 4 million. Leukocyte and differential counts were normal. Urinalysis revealed a trace of albumin and slight microscopic hematuria. Roentgenograms of the chest and abdomen were both negative. Feces were free of blood. We have no other laboratory reports.

VISITING M.D: The normal white cell count and pulse rate are inconsistent with abdominal conditions. I suggest three other studies.

## PART IV

ATTENDING M.D: *(On phone next day)* You were right on all three counts. Basophilic stippling was observed in 1,500 out of every million erythrocytes, 3 times the normal limit. The coproporphyrin excretion was markedly elevated, with a predominance of the isomer Type 3, typical of lead intoxication. To clinch the diagnosis, 0.32 mg. of lead per liter of urine was found.

VISITING M.D: I see you have read up on industrial intoxications. This case displayed most of the cardinal findings of lead poisoning. Obstinate constipation with attacks of lower abdominal colic relieved by deep pressure on the abdomen is characteristic. Peripheral neuritis is also seen. Most commonly involved are the motor nerves supplying the extensor muscles of the wrist and the peroneal muscles of the legs. The resultant wrist or foot drop should always suggest plumbism. The lack of teeth in this case robbed us of a helpful diagnostic clue, namely, the blue-black lead line of the gingival border. Albuminuria and microscopic hematuria also can occur in lead poisoning of long standing. We must determine the source of this patient's exposure to lead and curtail it immediately.

ATTENDING M.D: I've already checked that. The man is an acetylene torch welder. He hadn't been using the proper precautions.

# *We wish every doctor in the country could have this experience*

He was driving through the Mohawk Valley when night came, and stayed in our little village of Canajoharie till morning. When stretching his legs after breakfast, he saw our plant, stepped in, introduced himself and asked to see how we made baby foods. We were pleased indeed to show him—how the foods are selected—how they are scientifically processed in spotless kitchens—double pressure-cooked—each step in their production checked and double checked. We explained how completely we cooperate with doctors in all stages of the manufacture of Beech-Nut Foods. When he left us he said he had not realized that any manufacturer exercised such extreme care and thoroughness, or worked under conditions of such complete cleanliness.

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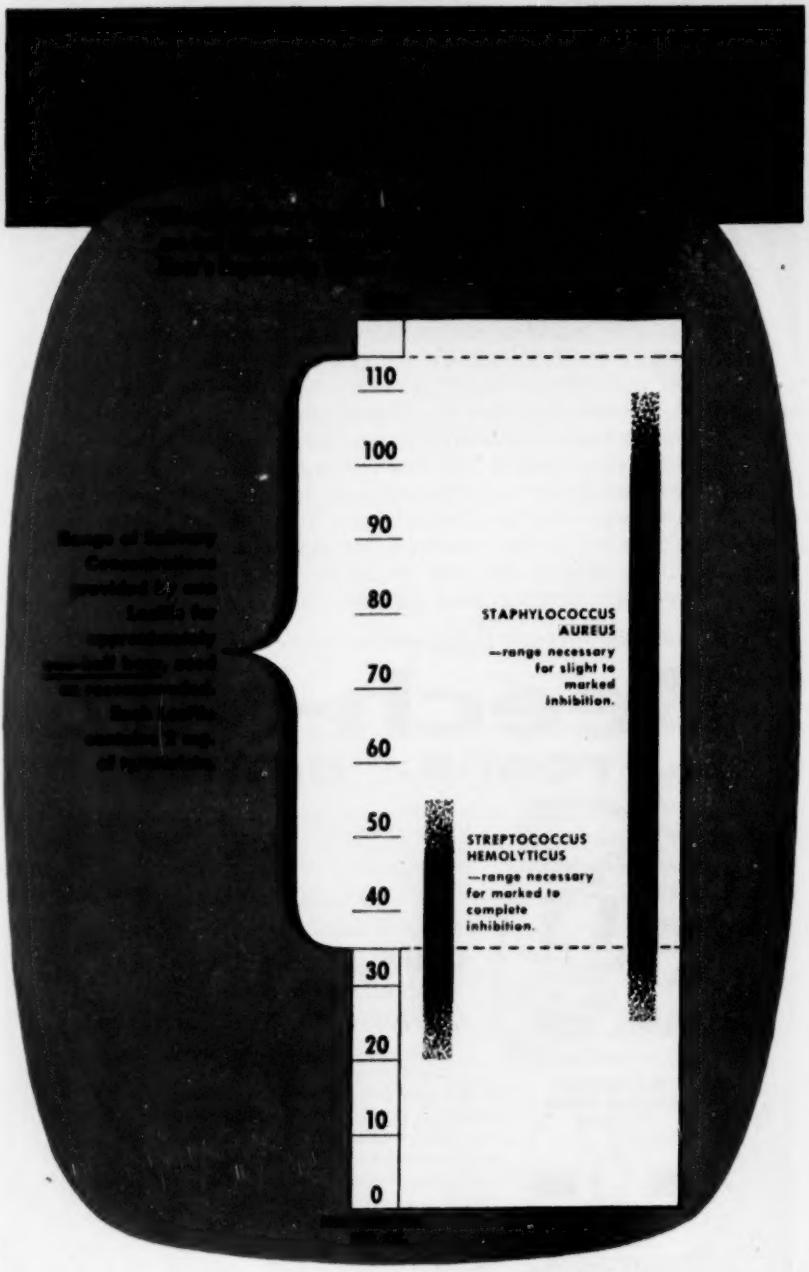
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## *What Would You Say?*

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*W. S. Judy, M.D.*
*Greenville, S.C.*

Mail your caption to The Cartoon Editor, MODERN MEDICINE, 84 South 10th St., Minneapolis 3, Minn.

*"How can you ever pay me? It really makes no difference. I'll take a check, money order, or even plain cash."*

# *Short Reports*

CHEMOTHERAPY

## German Synthetic Helpful Against Tuberculosis

An anti-tuberculosis drug which is virtually unknown in the United States has been used with considerable success in Germany. Drs. H. Corwin Hinshaw of San Francisco and Walsh McDermott of the New York Hospital–Cornell Medical Center, New York City, who have recently returned from Germany, believe that the new agent, Tibione, may be a useful adjunct in the treatment of tuberculosis. The drug is not effective against tuberculous meningitis or miliary tuberculosis, but types of tuberculosis which have not been affected by other drugs appear to react well to Tibione. The anti-tuberculous activity of Tibione is similar to that of para-aminosalicylic acid but, in tuberculosis of the lungs, is not as dependable or as rapid as that of streptomycin. Tibione may, however, be used over long periods of time for chronic disease when streptomycin is contraindicated and may also be valuable in the treatment of tuberculous empyema. Recommended dosage per day is 50 mg., gradually increased to 200 mg. Evaluation of the drug has been difficult since the testing was done at a time when German nutrition and medical care were improving greatly. Nevertheless, Tibione seems likely to acquire an important place in tuberculosis therapy, at least as an adjunctive measure.

MICROBIOLOGY

## Curative Dose of Penicillin

The number of pneumococcal and streptococcal organisms with which white rats and rabbits are inoculated appears to determine the amount of penicillin necessary for cure. Therapeutic dosage also increases with the age of the infection, presumably because of the interim increase in the number of organisms in the host, states Dr. Harry Eagle of the National Institutes of Health, Bethesda, Md. Experiments suggest that the drug, administered a short time after exposure, may be a preventive.

*J. Exper. Med. 90:595-607, 1949.*

VITAL STATISTICS

## 1948 Death Rate

While the population of the United States was increasing rapidly in 1948, the death toll dropped to the lowest figure in history. Although the total number of deaths was only about 1,000 less than in 1947, the rate per 1,000 dropped from 10.1 to 9.9. The chronic diseases of old age, such as heart disease and cancer, accounted for 63% of the entire figure. Poliomyelitis was responsible for more than 3 times as many fatalities as in 1947, and measles for nearly twice as many. Other diseases such as pneumonia, influenza, tuberculosis, and scarlet fever caused fewer deaths than the year before. Mortality from premature births, accidents, suicides, and homicides was also lower.

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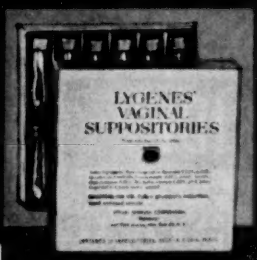


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ANALGESIA

## Tetraethylammonium for Chest Pain

Severe pain from pulmonary or myocardial infarct, trauma, pneumonia, cancer, and other chest lesions may be stopped by small doses of tetraethylammonium chloride. Analgesic effects were noted by Dr. Harold L. Israel of Woman's Medical College, Philadelphia, and associates in a case of thrombophlebitis with lung embolism. Intravenous doses of 3 mg. per kilogram of body weight are injected slowly, with temporary interruption when blood pressure drops. Pain from tuberculosis, mediastinal emphysema, rib fracture, and pleuritis is relieved.

*New England J. Med. 241:738-740, 1949.*

EXPERIMENTAL MEDICINE

## Atheromatous Lesions

Production of arteriosclerotic and atherosclerotic lesions appears to be partly dependent upon impoverished vascularity of the aortic wall. Dr. J. G. Schlichter and associates of Michael Reese Hospital, Chicago, find that the difficulty of inducing atherosclerosis in dogs may be largely overcome by interfering with the rich vascular supply of the ascending aorta. Only a moderate hypercholesterolemia leads to development of the lesions. When cautery is omitted, however, dogs with similarly raised blood cholesterol levels do not have atheromatous or other pathologic changes of the aortas.

*Am. J. M. Sc. 218:603-609, 1949.*

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If you have not already received your copy of these hospital tests, write to the address below and the report will be mailed to you promptly. The Andrew Jergens Company, Box 6, Dept. 93A, Cincinnati 14, Ohio.

EDUCATION

## Television of Surgical Procedure Improved

With the improvements recently demonstrated, television may now be used in surgical teaching without interfering in any way with normal operating room procedure. The improved system combines camera, telesurgical light, and a two-way sound system in a single unit suspended directly over the operating table. The camera is operated entirely by remote control, thus permitting the technician to remain outside the room. None of the special lights, cables, and wires which are necessary with other systems are present to clutter up the floor space around the table. The two-way sound system permits spectators to ask questions and receive answers directly from the operating surgeon.

HEMATOLOGY

## Replacement Transfusion in an Adult

Severe reaction after the transfusion of incompatible blood has been treated successfully with replacement of about 65% of the patient's blood. Dr. James E. Conley and associates of Marquette University, Milwaukee, report that in a thirty-five-year-old woman, oliguria, proteinuria, and hemoglobinuria were relieved immediately by the replacement transfusion.

*Am. J. Clin. Path. 19:1131-1134, 1949.*

# Are YOU interested in a preparation which has benefited 85.1% of 3634 Arthritic Patients?

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| Number of Cases Treated (by Type) | | Number of Cases Benefited | Percentage of Cases Benefited |
|---|---|---|---|
| HYPERTROPHIC | 1906 | 1663 | 87.3% |
| INFECTIOUS | 486 | 392 | 80.7% |
| RHEUMATOID | 1146 | 958 | 83.6% |
| FIBROSITIS | 96 | 79 | 82.3% |
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These strikingly favorable results confirm the value of administering RAY-FORMOSIL ampuls in treating rheumatism and arthritis. No untoward effects were reported in any of these cases—RAY-FORMOSIL is virtually non-toxic in its recommended dosages. During the past 15 years, more than one million RAY-FORMOSIL ampuls have been administered.

FORMULA: Each cc. contains:
Formic Acid..... 5 mg.
Hydrated Silicic Acid..2.25 mg.

SUPPLIED: Two cc. ampuls: boxes of 25 ($7.50), 50 ($14.00) and 100 ($25.00).

These net prices to physicians are 25% off regular list prices.

RAYMER

*OVER A QUARTER CENTURY SERVING THE PHYSICIAN*

PHARMACAL COMPANY

*Pharmaceutical Manufacturers*

N. E. CORNER JASPER AND WILLARD STREETS
PHILADELPHIA 34, PA.

ANTICOAGULANTS

## New Coumarin Substance

The action of BOEA, the ethyl ester of di-4-oxycoumarinyl acetic acid, appears to be faster than that of dicumarol, and the drug is more rapidly excreted. After a total oral dosage of 0.9 to 1.2 gm. in two days, Dr. Catherine C. Burt of Edinburgh University, Scotland, and associates find that the prothrombin levels of most patients drop to 50% or lower within thirty-six hours and return to former levels in the same length of time when therapy is discontinued. The duration of the effect was not necessarily determined by the rapidity of the initial reaction. Prothrombin estimations must be made frequently before and after treatment to protect against hemorrhage, although the rapid elimination of BOEA somewhat obviates this danger. No toxic effects have been noted except for a slight nausea which may be due to the bitter taste of the tablet.

*Brit. M. J. 4639:1250-1254, 1949.*

PUBLIC HEALTH

## College Health President

The American College Health Association has elected Dr. John E. Sawhill of New York University, New York City, as president to succeed Dr. Irvin W. Sander of Wayne University, Detroit. Dr. C. D. Gossage of the University of Toronto is the new vice-president.

| SPONSOR: | STATION: |
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| CARNATION COMPANY | CBS FULL NETWORK |
| **PROGRAM:** | **BROADCAST TIME:** |
| CONTENTED HOUR | SUNDAY 10:00 P.M. EST |

WALLINGTON: When your baby is old enough to go off formula feedings your doctor will let you know. Don't be impatient and don't take advice from anybody except your doctor. He knows best.

Excerpt from the actual script of a recent broadcast of Carnation's Coast-to-Coast "Contented Hour"

# Carnation Has Always Said: "ASK YOUR DOCTOR"

Carnation is against self-medication of *any* type. Our long association with health problems has convinced us of the real *dangers* inherent in the well-meant but ill-informed "medical' advice of friends and relatives.

Since Carnation is sincerely interested in the health of America's children, Carnation has always said, and will continue to say: "Ask Your Doctor"!

Millions of times every month, Carnation advertising directs young parents to the source of the soundest advice on child health – the doctor.

It is gratifying to realize that this long term educational work is producing tangible results. *The evidence:...* **8 out of 10 mothers raising their children on Carnation say their doctor recommended it!**

**Here is how Carnation protects the doctor's recommendation**

You can prescribe Carnation Evaporated Milk *by name* with complete confidence. Every drop in every can of Carnation is processed with *"prescription accuracy"* in Carnation's *own* dairy plants, under Carnation's *own* step-by-step supervision. Painstaking care protects your recommendation when you recommend Carnation.


**The Milk Every Doctor Knows**


## advantages:

**VAPORUB'S** well-balanced formula contains 7 volatilizing ingredients, including menthol, thymol, camphor and oil of eucalyptus.

**VAPORUB'S** medicated vapors are soothing when dryness and irritation accompany the respiratory distress.

**VAPORUB** is already on hand in most homes . . . may be used either in a vaporizer or in a bowl of boiling water.

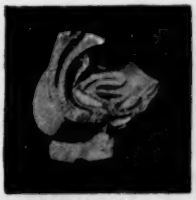
*so safe...*

The more than two billion TAMPAX tampons purchased in the past twelve years (plus extensive clinical tests*) bespeak the inherent safety of these dainty intravaginal cotton guards.

They do not cause vaginitis or erosion, and cannot block the flow. The three absorbencies (Regular, Super, Junior) individualize menstrual hygiene—and are amazingly comfortable and convenient, and thoroughly adequate.

*West. J. Surg., Obstet. & Gynec., 51:150, 1943; J.A.M.A. 128:490, 1945; Am. J. Obst. & Gynec., 48:510, 1944, etc.

**TAMPAX INCORPORATED**
**PALMER, MASS.**



*the internal menstrual guard of choice* **TAMPAX**

*Your request will bring related literature and professional samples promptly.*

MEDICINE

## Rheumatic Disease Therapy

Glucuronic acid has been used to good effect in the treatment of rheumatic diseases. Doses of from 10 to 15 gr. were given three or four times a day to 50 patients. In 2 cases, daily doses as high as 150 gr. were administered with no serious side effects. For most of the patients, treatment continued about two months or until improvement ceased. The drug failed completely in only 8 cases. Of the others, 9 patients had complete remissions of the disease and 33 improved, report Dr. Joseph H. Hodas and associates of Misericordia Hospital, New York City. Best results were obtained with osteoarthritis, especially in cases of short duration and in those associated with Heberden's nodes. The results were equivocal in rheumatoid arthritis.

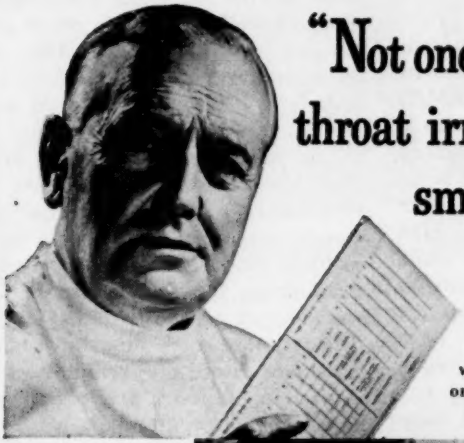
*Journal-Lancet 69:385-388, 1949.*

PUBLIC HEALTH

## Improved DDT

With the addition of a compound found in Burma teak, DDT may have a more deadly effect against the mosquito for a longer time. S. K. Ranganathan and associates of the Establishment Laboratory, Kanpur, India, found that the potency of the insect-killer increased after storage in boxes of Burma teak. The chemical responsible, beta-methyl anthraquinone, does not kill mosquitoes when used alone.

*Throat Specialists report on 30-day test of Camel smokers:*



# "Not one single case of throat irritation due to smoking Camels!"

**Yes, these were the findings of throat specialists after a total of 2,470 weekly examinations of the throats of hundreds of men and women who smoked Camels—and only Camels—for 30 consecutive days.**

R. J. Reynolds Tob. Co., Winston-Salem, N. C.

***Long Island housewife Edna Wright,*** one of the hundreds of people from coast to coast who made the 30-day Camel mildness test under the observation of throat specialists.



*According to a Nationwide survey:*

## More Doctors Smoke Camels

***than any other cigarette***

Yes, doctors smoke for pleasure, too! In a nationwide survey, three independent research organizations asked 113,597 doctors what cigarette they smoked. The brand named most was Camel!

## Washington Letter

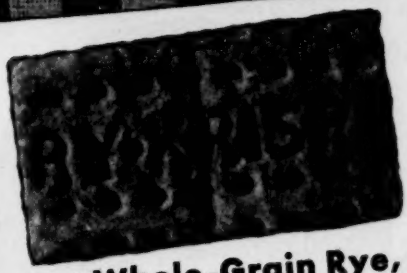
*(Continued from page 22)*

orders. The manufacturer usually lends all possible assistance. The investigator also has access to AMA's list of physicians. If the shipment is ruled unsafe, it is recalled immediately. Frequently every bottle is accounted for within two days after the first sample is purchased. FDA headquarters in Washington maintains contact with all its agents by wire. These in turn round up the suspected local shipments.

"New Drug Applications" represent another large responsibility. Under the law, a thorough and time-tested procedure of experimentation is required before a new drug is allowed on the market. The producer must specify the exact contents of the preparation, but his trade secrets are protected by law. Also, the distributor must state exactly how the drug is to be labeled and must submit for approval any advertising.

Last November, for example, fifty-four new drugs were submitted to FDA for approval. At the end of the month, only thirty of these had been certified. None had yet been refused certification, but final determination was delayed on most of the others. The fact that three thousand public warehouses store products subject to inspection indicates the magnitude of this phase of the work.

*(Continued on page 166)*



# NO WHEAT
# NO EGG
# NO MILK

## Just Whole-Grain Rye, Salt and Water

That's why Ry-Krisp is most often prescribed as *the* bread *in allergy diets.* Milled, mixed, baked and packaged under controlled conditions so contamination by other food substances *cannot* occur. Has a delicious rye flavor your patients appreciate. Supplies the protein, minerals and B-vitamins of whole-grain rye.

### Free Allergy Diet Material
### To Help You Guide Food-Sensitive Patients

**DIAGNOSTIC AIDS:**

**14-Day Food Diary**—Spaces to record foods eaten, symptoms and medications.

**Restricted Diet**—For determination of suspected food allergy.

**DIETARY GUIDES:**

**Wheat-Free Diet**
**Egg-Free Diet**
**Milk-Free Diet**
**Wheat-Egg-Milk-Free Diet**

Each gives lists of allowed and forbidden foods, guide for selecting a nutritionally adequate diet, special recipes.

*Each item above is available in pads of 50. Send for booklet showing sample of each, then order the number of pads you can use.*


USE COUPON TO ORDER **FREE** BOOKLET

**Please send booklet C 2143 showing samples of above material, so I may order pads as needed.**

RALSTON PURINA COMPANY, Nutrition Service
LM-E Checkerboard Square, St. Louis 2, Missouri.

Name_____ M. D.

Street_____

City_____ Zone____ State_____

# Two-Way Protection

## TO MINIMIZE THE ELEMENT OF CHANCE

The element of chance in conception becomes an element of danger when pregnancy or childbirth is contraindicated. To reduce this risk to the barest minimum, many authorities recommend the combined use of the Lanteen Flat Spring Diaphragm and Lanteen Jelly.

By prescribing the Lanteen Diaphragm and Jelly method of contraception, the physician assures his patient:

**1. DEPENDABLE TWO-WAY PROTECTION.** Combined use of the Lanteen Flat Spring Diaphragm and Lanteen Jelly provides effective mechanico-chemical protection against pregnancy. The barrier effect of the diaphragm augments the sperm-destroying action of the jelly.

**2. CLOSE MEDICAL SUPERVISION.** The teaching of the improved Lanteen Technique encourages the return of the patient for medical supervision at regular intervals and discourages over-the-counter prescribing. With the combined use of the Lanteen Flat Spring Diaphragm and Jelly, return visits for periodic fittings enable the doctor to correct faulty patient technique, make necessary changes in the diaphragm size and maintain close check on the patient's general health.

Lanteen

***Write for a complimentary copy of the illustrated brochure, "Improved Method of Contraception."***

Lanteen Jelly contains: Ricinoleic Acid, 0.50%; Hexylresorcinol, 0.10%; Chlorothymol, 0.077%, Sodium Benzoate and Glycerine in a Tragacanth base.

*Leaders in the Development of Contraceptive Methods*

**LANTEEN MEDICAL LABORATORIES, INC., 2020 Greenwood St., Evanston, Ill.**

# ℞ *Cabbages*

Once upon a time a blacksmith fell ill of a strange disorder. After eating a dish of cabbage, he fully recovered. Some weeks later his neighbor, the tailor, developed similar symptoms; cabbage was promptly administered but, alas, the tailor died. A would-be scientist in the village concluded that cabbage was a specific for the disorder, but *in blacksmiths only; for tailors* he pronounced it worthless and even dangerous.

The physician of today requires dependable evidence for the usefulness of his therapeutic agents. He also insists upon ***uniform, dependable purity*** for every drug that he uses.

For over 80 years physicians have relied on the ***uniform, dependable purity*** of **Mallinckrodt** products.

**MALLINCKRODT PRESCRIPTION CHEMICALS**

| | |
|---|---|
| Iodides | Silver Salts |
| Bismuth Compounds | Mercurials |
| Iron Compounds | Salicylates |
| Diagnostic Aids | Mandelates |
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Anesthetic Agents

*83 Years of Service to Chemical Users*

**MALLINCKRODT CHEMICAL WORKS**

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**Uniform Dependable Purity**

Precautions regarding insulin and antibiotics have added another task. Now, FDA inspectors must certify each batch of these products before shipment. Standardized drugs are not subject to such stringent restrictions but are allowed to move freely, subject to uniform regulations.

With few exceptions, courts have been liberal in the interpretation of FDA's power since the present law went on the books in 1938. The law gives the agency less authority over misrepresentation than over contents. If FDA is convinced that a shipment or a preparation is unsafe for human use, because of either contents or labeling, FDA is authorized to seize the product immediately and prevent further shipments. If the producer wants to fight, he must take court action.

However, if FDA suspects false claims, but has no evidence of danger to the public, the agency can act only through the courts. In other words, the law empowers FDA to protect human life by immediate action; but leaves protection of the public's pocketbook to the courts.

Two current examples demonstrate how this agency treats new drugs. Numerous antihistaminic preparations have been permitted to go on the market. None of them, according to FDA, is more than 50% the strength a physician would prescribe.

Also, the agency has approved sale of various urea salt preparations for use in tooth paste and tooth powder. However, the agency's experts are not satisfied that claims for all these products are accurate. If the claims are not borne out in experiments now under way, FDA will require that the producers tone down the claims or face prosecution for false labeling.

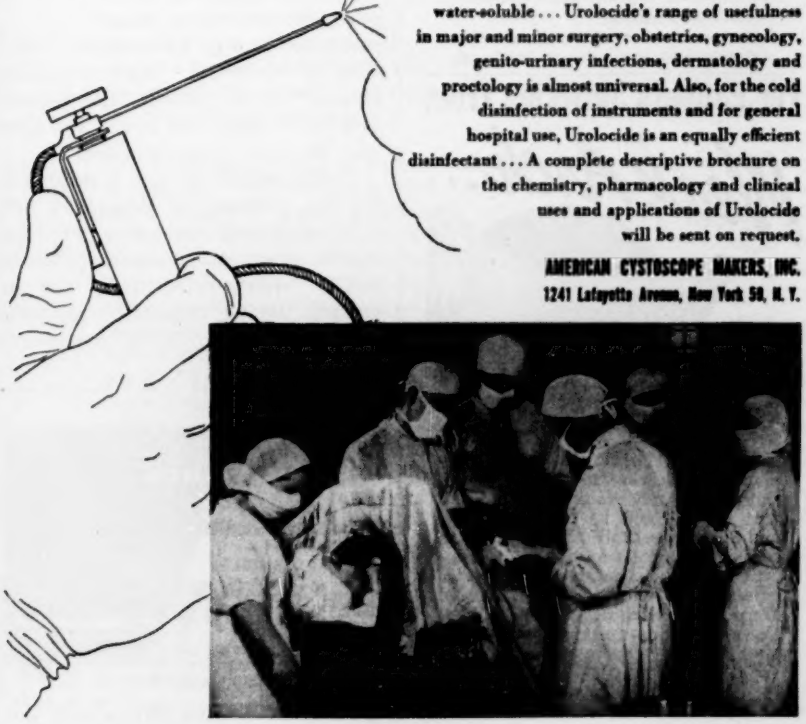
# UROLOCIDE

## *a new, powerful bactericide...*

***Available in pure crystal form in packages of 3.8 Gm. sufficient to make 1 gallon of 1:1000 solution or tincture; also:***

| | | |
|---|---|---|
| Tincture | 1:500 | 8 oz. and 1 gal. bottles |
| Tincture | 1:1000 | |
| Aqueous Solution | 1:1000 | |

**Urolocide—a new non-toxic quaternary ammonium compound of unprecedented bactericidal efficiency—marks an important step forward towards the realization of the surgeon's dream of optimum antisepsis... Urolocide is an all-purpose disinfectant containing no phenolic, mercuric or other corrosive ingredient, yet it is rapidly bactericidal and fungicidal—in highest dilutions—against a wide range of commonly occurring pathogens (both gram-positive and gram-negative). Urolocide possesses extraordinary detergent and penetrating properties and is non-irritating to human tissues. It is odorless, colorless, non-staining and water-soluble... Urolocide's range of usefulness in major and minor surgery, obstetrics, gynecology, genito-urinary infections, dermatology and proctology is almost universal. Also, for the cold disinfection of instruments and for general hospital use, Urolocide is an equally efficient disinfectant... A complete descriptive brochure on the chemistry, pharmacology and clinical uses and applications of Urolocide will be sent on request.**



**AMERICAN CYSTOSCOPE MAKERS, INC.**
**1241 Lafayette Avenue, New York 59, N. Y.**



## Antihistamine Study

Five hundred enlisted Navy men are taking part in an investigation of antihistaminic drugs at Naval Training Center, Waukegan, Ill. The project will continue through April 15. Two phases are included—prophylaxis and treatment. The results will be withheld until all findings have been evaluated by the Navy. . . . Navy has selected 187 medical seniors for internship in its hospitals.

## Data on Radioactivity

Within a few days, three government departments announced courses on various problems of radioactive materials. Navy's course is on medical aspects of special weapons and radioactive isotopes and is described as primarily for reserve officers.

Atomic Energy Commission scheduled a series of "teacher-training courses" in conjunction with National Security Resources Board and General Services Administration.

Public Health Service is approaching the problem by creating a new unit which will develop a radiologic health program to meet potential health hazards created by the increased use of radioactive material and radiation-producing machinery.

# a wide antibacterial range in urinary-tract infections

Extensive clinical use[1,2,3,4] has established the dependable effectiveness of MANDELAMINE* against organisms commonly found in urinary-tract infections. This fact simplifies treatment, as the administration of MANDELAMINE can be started without awaiting laboratory reports on the organisms involved.

MANDELAMINE is exceptionally well tolerated. Its use is not attended by the danger of crystalluria, and gastric upset or other distressing side-effects are rarely observed. Bacteria seldom, if ever, develop resistance to this drug as they sometimes do to other chemotherapeutic agents and antibiotics. Dietary or fluid regulation is not required. No supplementary acidification is necessary except where urea-splitting organisms occur.

MANDELAMINE is indicated in the management of pyelitis, nephroptosis with pyelitis, cystitis, prostatitis, nonspecific urethritis, and infections associated with urinary calculi or neurogenic bladder; pre- and postoperative prophylaxis in urologic surgery.

MANDELAMINE is supplied in bottles of 120, 500, and 1,000 enteric-coated tablets. It is available through all prescription pharmacies.

Complete literature and samples to physicians on request.

1. Butt, A. J.: J. Florida M. A. 35: 430 (1949). 2. Carroll, G., and Allen, H. N.: J. Urol. 55: 674 (1946). 3. Kirwin, T. J., and Bridges, J. P.: Am. J. Surg. 52: 477 (1941). 4. Scudi, J. V., and Duca, C. J.: J. Urol. 61: 459 (1949).

*MANDELAMINE is the registered trademark of Nepera Chemical Co., Inc., for its brand of methenamine mandelate.

NEPERA CHEMICAL CO., INC.
Pharmaceutical Manufacturers
NEPERA PARK . . . YONKERS 2, N. Y.

# MANDELAMINE

BRAND OF METHENAMINE MANDELATE

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# *Current Books & Pamphlets*

*This catalogue is compiled from all available sources, American and foreign, to insure a complete listing of the month's releases.*

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MEDIZIN IN BEWEGUNG: KLINISCHE ERKENNTNISSE UND ÄRZTLICHE AUFGABE *by* Richard Siebeck. 520 pp. Georg Thieme, Stuttgart. 27 M.

DIE ERKRANKUNGEN DES DARMES *by* W. Zweig. 253 pp. Georg Thieme, Stuttgart. 22 M.

### Neurosurgery

TECHNIQUE DE LA CHIRURGIE DU SYMPATHIQUE ET DE SES INFILTRATIONS *by* O. Lambret *et al.* 3d ed. 240 pp., ill. Gaston Doin & Co., Paris. 850 fr.

THE DIAGNOSIS AND TREATMENT OF BRAIN TUMORS AND CARE OF THE NEUROSURGICAL PATIENT *by* Ernest Sachs. 2d ed. 552 pp., ill. C. V. Mosby Co., St. Louis. $15

### Ophthalmology

VISUAL DEVELOPMENT *by* J. H. Prince. Vol. 1, 430 pp., ill. E. & S. Livingstone, Edinburgh. 50s.

THE ANATOMY AND HISTOLOGY OF THE HUMAN EYEBALL *by* Maximillian Salzmann. 232 pp., ill. Illinois Medical Book Co., Chicago. $12


*ALSO KNOWN AS DETTOL

## A "new" Antiseptic proved by 20 years performance

New to the medical profession of the United States, Dett, under the name Dettol, is standard equipment for surgeons and hospitals throughout the British Empire. Dett, for obstetrical and surgical use, has been proved since 1929.

Dett, although deadly to germs, is gentle to human tissue. This clean, clear liquid with an agreeable odor is safe, effective, non-irritating and non-staining. Physicians who have used Dettol in other countries will welcome its introduction in the United States under the name of Dett.

For a generous size sample, and literature, write to: The R. T. French Co., Pharmaceutical Department, Rochester 9, New York.

**DETT** *THE MODERN WEAPON AGAINST INFECTION*

### Physiology

RECENT ADVANCES IN PHYSIOLOGY *by* W. H. Newton. 7th ed. 268 pp., ill. J. & A. Churchill, London. 21*s.*

PHYSIOLOGY IN HEALTH AND DISEASE *by* Carl J. Wiggers. 5th ed. 1,242 pp., ill. Lea & Febiger, Philadelphia. $10

### Therapeutics

THE SULPHONAMIDES IN GENERAL PRACTICE *by* Edward D. Hoare. 100 pp. Staples Press, London. 5*s.*

LA STREPTOMYCIN *by* Marcel Morin *et al.* 509 pp., ill. Masson & Co., Paris. 1,950 fr.

STREPTOMYCIN, ITS NATURE AND PRACTICAL APPLICATIONS *edited by* Selman A. Waksman. 610 pp., ill. Williams & Wilkins Co., Baltimore. $10

### Tuberculosis

DIFFERENTIALDIAGNOSTISCHE BILDER ZUR LUNGEN TUBERKULOSE *by* Hanns Alexander. 146 pp., ill. Georg Thieme, Leipzig. 15 M.

TUBERKULOSELEXIKON FÜR ÄRZTE UND BEHÖRDEN *by* Wilhelm Roloff. 372 pp. Grune & Stratton, New York City. $4.50

### Nursing

TUBERCULOSIS NURSING *by* Jessie G. Eyre. 292 pp., ill. H. K. Lewis & Co., London. 21*s.*

NEUROLOGIC NURSING *by* Nicholas Gotten *and* Letitia Wilson. 2d ed. 295 pp., ill. F. A. Davis Co., Philadelphia. $3.50

## Less Tax on Time, Patience and Ingenuity

• **1** In 97% of chronic ulcerative colitis patients, evidence of the disease may be seen through the proctoscope.[1]

• **2** The field disclosed through the proctosigmoidoscope is the mucosa of the lower bowel.

• **3** The field of Nisulfazole is the lower bowel. The Suspension is placed in the rectum and sigmoid to act against the infection and inflammation.

These three facts account for the all-out satisfaction of patients with Nisulfazole, which, to the physician, is but a part of his multiple approach to the therapy of chronic ulcerative colitis.

A narrowly specialized sulfonamide, Nisulfazole acts locally; does not appreciably enter the blood stream.

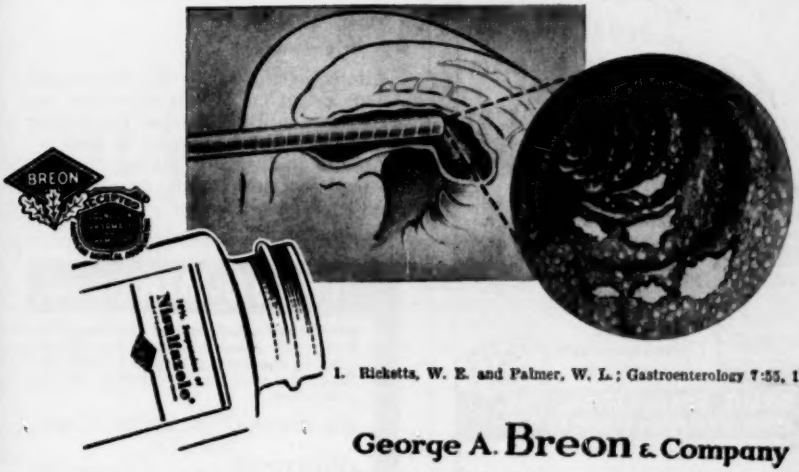
The physician's time, patience, and ingenuity are less taxed by unruly ulcerative colitis when he prescribes

# Nisulfazole®

**10% Suspension**

**(Brand of PARANITROSULFATHIAZOLE)**

in bottles of 296 cc (10 fl. oz.)




1. Ricketts, W. E. and Palmer, W. L.; Gastroenterology 7:55, 1946.

**George A. Breon & Company**

KANSAS CITY, MISSOURI

RENSSELAER, N. Y.
ATLANTA
SAN FRANCISCO

# PATIENTS . . . I Have Met

***The editors will pay $1 for each story published. No contributions will be returned. Send your experiences to the Patients I Have Met Editor, MODERN MEDICINE, 84 South Tenth St., Minneapolis 3, Minn.***

### Classified

As female intern, I often create confusion among the patients who are accustomed to a doctor being of the sex that wears his trousers on the outside. One six-year-old boy, who was sent in for treatment following a dog bite, couldn't quite figure out my status. Finally he said, "I know, you're a dog doctor."—M.A.

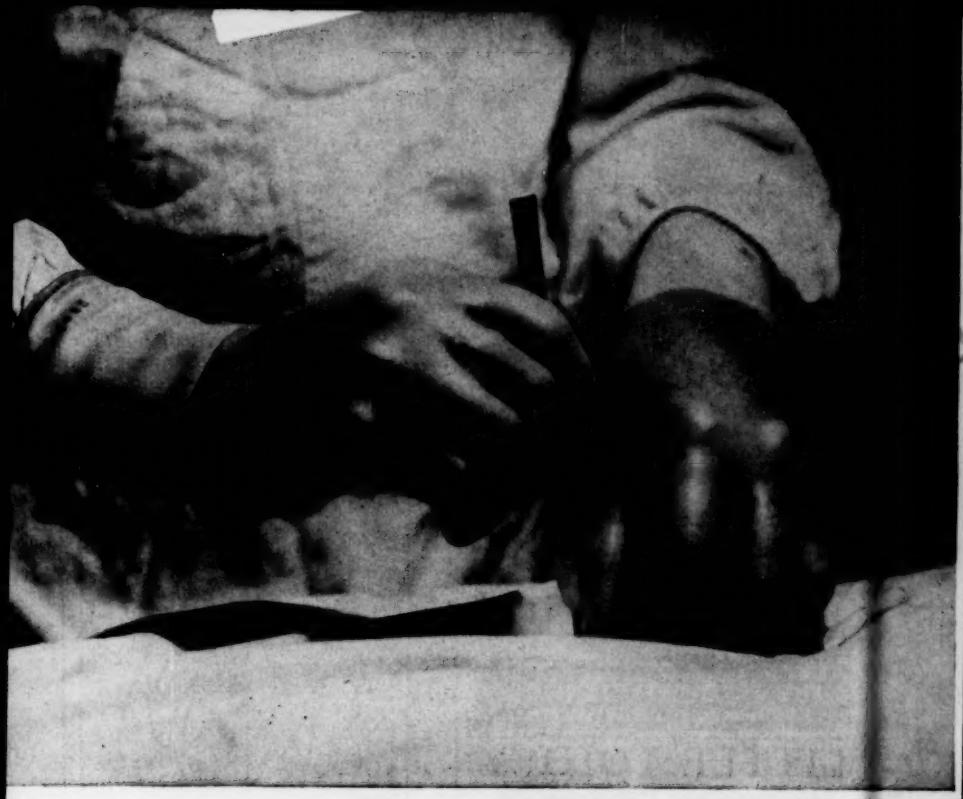
### Not Even a Pinch?

I was helping a country doctor with a sick mother and her baby. While I was bathing and dressing the baby, a four-year-old looked on. When changing the baby's diaper I neglected to sprinkle the tot with talcum before dressing him. "Aren't you gonna salt him this time?" the little sister asked me.—K.B.

### Day Brighteners

Life is never dull for the obstetrician. A lady called me up the other day and asked how much I charged for a pregnancy case from beginning to end.

Another lady called asking, "I haven't seen red this month, do you think it will be a boy or girl?"—G.M.C.



# Does it matter if you're comfortable?

OF COURSE the surgeons' gloves you wear must be tissue-thin so that your sensitive touch is not impeded. And they must be strong to give you the protection and the service life you require. But what about comfort?

B. F. Goodrich "Miller" brand surgeons' gloves are designed to give you maximum comfort . . . bare hand comfort. Backs are full for free action. Fingers are long and tapered. Wrists are snug fitting. These gloves fit your hand because they're made on sculptured hand forms. They're sized accurately, they allow flexing without tension, they're really comfortable.

Tissue-thin, strong, comfortable . . . that's the combination that makes B. F. Goodrich "Miller" brand surgeons' gloves the preferred gloves. That's true no matter which of the three types you choose:

***B. F. Goodrich "Miller" brand surgeons' gloves*** — Regular wrist. Sizes 6 to 10, including half sizes. White or brown. "Smooth" or "Cutinized" surface.

***B. F. Goodrich "Miller" brand examination gloves*** — Short length cuff. Sizes 7 to 9, including half sizes. White only.

***The new B. F. Goodrich "Special Purpose" glove*** — Created for those who develop an allergic dermatitis when using ordinary rubber gloves. Sizes 6½ to 9½, including half sizes. Look for the identifying green band on the cuff.

Order B. F. Goodrich "Miller" brand gloves from your hospital or surgical supply dealer. *The B. F. Goodrich Company, Sundries Division, Akron, Ohio.*

**B.F. Goodrich**

*Surgeons' Gloves*

### Resounding Result

"That's a wonderful nurse you have here," said the hospital patient to the intern. "The touch of her hand cooled my fever instantly."

"Yeah," agreed the intern, "we heard the slap all through the ward."—C.A.

### Not Necessary

Upon request of the doctor I prepared a patient with poor circulation for a hydrotherapy treatment. Looking at the large whirlpool, the patient gasped, "But nurse, I'm clean. I've already taken a bath today!"—E.M.


*"You won't fully realize how lucky you are until March 15."*

### A Sore Point

A patient was referred to me with a rectal complaint. I asked him his name and he replied, "Sores."

I said, "I did not ask your complaint, but your name.

"That's what I gave you," he said. "John Soares."—C.S.

### A Sister, Anyway

Medical students were examining patients in the gynecologic out-patient department. During the course of one examination a young doctor exclaimed, "You have a cystocele."

Bewildered, the patient replied, "No, but I has got a sista Sal."—E.H.

External Cod Liver Oil Therapy

# DESITIN OINTMENT

*Contains Crude Cod Liver Oil, Zinc Oxide, Talcum, Petrolatum and Lanolin*

**Used effectively in GENERAL PRACTICE for the treatment of Wounds, Burns, Indolent Ulcers, Decubitus, Intertrigo, Skin Lesions, Hemorrhoids, Anal Fissures, etc.**

**In PEDIATRICS for the treatment of Diaper Rash, Exanthema, Chafed and Irritated Skin caused by Urine, Excrements or Friction, Prickly Heat and in the nursery for General Infant Care.**

Fatty acids and vitamins are in proper ratio, thereby producing optimum results. Non irritant, acts as an antiphlogistic, allays pain, stimulates granulation, favors epithelization. Under Desitin dressing, necrotic tissue is quickly cast off. Dressing does not adhere to the wound. In tubes 1 oz., 2 oz., 4 oz., and 1 lb. jars.

**Desitin Medicinal Dusting Powder** is super fatted with crude cod liver oil in a non irritating powder base. Indications: In infant care in the treatment of IRRITATED SKIN, SUPERFICIAL WOUNDS, DECUBITUS, INTERTRIGO, PRURTUS and URTICARIA, in 2 oz. Shaker-Top Cans.

*Professional Samples on Request*

For the Medical Profession

**DESITIN CHEMICAL COMPANY**

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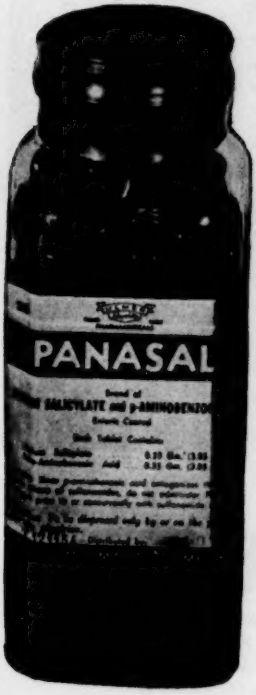
# INDEX TO ADVERTISERS

# *A New Ulmer Specialty Tablet*

# PANASAL "Ulmer"




**PANASAL, the latest of the Ulmer line of fine pharmaceutical tablet specialties, offers a new and effective approach to the treatment of arthritis, rheumatism and rheumatic fever. PANASAL, given orally, permits the high salicylate blood levels formerly obtainable only by intravenous injection under hospital care.**

***Each PANASAL "Ulmer" Tablet contains:***

**Sodium Salicylate**
**.....0.25 Gm. (3.85 gr.)**

**Para-aminobenzoic Acid**
**.....0.25 Gm. (3.85 gr.)**

**INDICATIONS:**

**Rheumatic fever, arthritic states, rheumatism, neuralgias, myalgias, and such other conditions as are amenable to salicylate therapy. PANASAL "Ulmer" is particularly aimed at assuring high therapeutically effective blood levels of salicylates for the treatment of these conditions.**

**Write for booklet MM-250 on *The Treatment of Rheumatism, Arthritis and Rheumatic Fever with Panasal "Ulmer."* This booklet is available free on request, and gives the rationale of this new treatment method, indications, dosage regimen, etc. A new bibliography is included.**

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# NOW.. ADDED CONVENIENCE FOR THE PATIENT

The "RAMSES"* Tuk-A-Way† Kit provides added convenience for the patient, for she will find, neatly assembled in this colorful, washable plastic kit, all the units required for optimum protection against conception: a "RAMSES" Flexible Cushioned Diaphragm of the prescribed size; a "RAMSES" Diaphragm Introducer of corresponding size; and a regular-size tube of "RAMSES" Vaginal Jelly.‡

The Tuk-A-Way Kit packs inconspicuously in the corner of a traveling bag or dresser drawer. It is available to patients through all pharmacies.

*The word "RAMSES" is a registered trademark of Julius Schmid, Inc. "RAMSES" Vaginal Jelly is accepted by the Council on Pharmacy and Chemistry of the American Medical Association. The "RAMSES" Diaphragm and Diaphragm Introducer are accepted by the Council on Physical Medicine and Rehabilitation of the American Medical Association.

†Trademark of Julius Schmid, Inc. ‡Active Ingredients: Dodecaethyleneglycol Monolaurate 5%; Boric Acid 1%; Alcohol 5%.

*gynecological division*

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## ★ *Epileptic Men of Genius* ★

**The brilliant English poet, Lord Byron, who had many mild convulsive attacks during his short life, is an outstanding example of the fact that epilepsy need not cloud a man's mentality.**

**Comparative studies have shown that in some cases better control of grand mal as well as petit mal seizures can be obtained with Mebaral than with corresponding doses of other antiepileptic drugs. Mebaral produces tranquillity with little or no drowsiness. It is particularly desirable not only in epilepsy but also in the management of anxiety states and other neuroses. The fact that Mebaral is almost tasteless simplifies its administration to children. Average dose for children ½ to 3 grains, adults 3 to 6 grains daily. Tablets ½, 1½ and 3 grains.**

**MEBARAL®**

*Brand of Mephobarbital*

# Pyribenzamine

## For control of allergic symptoms whic may accompany a Common Cold . .

**Pyribenzamine hydrochloride has been effectively and widely us in the control of allergic symptoms. Clinical tests have repeatec shown that Pyribenzamine provides maximum allergic relief wi minimal side effects. For relief of the allergic symptoms whi may be associated with the common cold, Pyribenzamine is ava able in the following forms:**

### 1. Pyribenzamine-Ephedrine for systemic treatment

Each tablet contains 25 mg. of Pyribenzamine hydrochloride and 12 mg. ephedrine sulfate. This combination synergistically promotes decongesti of the entire respiratory tract including the nasopharyngeal mucosa.

### 2. Pyribenzamine Nebulizer to control nasal symptoms

Immediate relief with no systemic side effects. Pocket-size nebuli distributes a mist of minute droplets of Pyribenzamine hydrochlori Nasal Solution 0.5% throughout the nasal passages.

### 3. Pyribenzamine Expectorant to control cough

Each teaspoonful contains 30 mg. of Pyribenzamine citrate, 10 mg. ephedrine sulfate and 80 mg. of ammonium chloride. Highly effective relief of cough. Blocks congestive and spasmogenic effects of histami shrinks respiratory mucosa and liquefies bronchial secretions.

**More prescriptions have been written for Pyribenzamine than for all other antihistamin**

**Ciba** PHARMACEUTICAL PRODUCTS, INC., SUMMIT, NEW JERS

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